In a healthcare system where physicians and hospitals are called upon daily to improve the quality of care while reducing costs, we believe there is an opportunity for innovative solutions to influence outcomes.

To go beyond reacting to events to actually anticipating them before they happen.

By harnessing data and leveraging analytics, we're able to put our business intelligence, proven risk reduction strategies and innovative educational programs to work, so that you can anticipate risk and improve overall outcomes.

If you're ready to change the way you think about medical malpractice insurance, call 800.225.6168 or visit ThinkCoverys.com

COVERYS®

Better Intelligence
for Better Outcomes℠

ProSelect Insurance Company 800.225.6168 www.coverys.com

Brain Warfare: Primates To Humans?

Yawning: Monkey see, monkey do

JOSEPH H. FRIEDMAN, MD
joseph_friedman@brown.edu

Many readers probably are familiar with the surprising observation published recently showing that young chimpanzees, but not juveniles, were immune from the contagious form of yawning (Madsen EA.) Chimpanzees show a developmental increase in susceptibility to contagious yawning: a test of ontogeny and emotional closeness on yawn contagion. (PLoS One 2013;8(10)e76266). In a surprise development, a study of 33 orphaned chimps showed that juveniles only "caught" yawning when a human yawned, but that young chimps did not. Moveover, there was something special about yawning, in contrast to certain other stereotypic behaviors. Juveniles didn't develop contagious gaping or contagious nose wiping, stereotypes in chimps. Equally interesting was the observation that the strength of the contagion didn't matter if the yawning model, ie, the yawner, was their adoptive human mother or an unknown human.

I was surprised that the IRB had approved a plan that didn't include a description of how the researchers were going to deal with the chimps which were caught yawning. Is there treatment for yawning? It's presumably not life threatening but could it be? Is there a cure? Once present can it worsen? Does it lead to other problems? One can imagine that persistent yawning may provoke a reaction from the other chimps that could possibly lead to embarrassment, possibly ostracism. Was this protocol sensitive to the needs of its subjects?

One must also consider the other aspects of this protocol. What if "gaping" was contagious? How stigmatizing is it to be a gaping chimp? Would gaping interfere with socialization? Might a gaping chimp provoke antagonism, especially if it was also yawning? Imagine how hard life might be for a chimp which not only was yawning but was gaping? I've seen chimps suffer for lesser social miscues than these.

I suspect contagious nose wiping might pose different and lesser problems. Nose wiping, especially in chimps, which probably were not given tissues or handkerchiefs, probably looks like scratching an itch to another chimp, and not necessarily a reflection of boredom, stupidity or dumfounded-ness. Other chimps might not react so badly to a chimp which spent a lot of time rubbing its nose. They might steer clear though if they interpreted the behavior as a sign of an infestation of nose mites.

I have not addressed the issue of contagion. The authors assumed, of course, as you, the reader did as well, that the contagion was based on observation. The chimp saw a yawn and the brain said, "boring," and so another yawn was born. But the experiment did not include blind or blindfolded primates. And why should a chimp, which spends 8 hours eating and 16 hours sleeping, get bored by a yawn? No blind or blindfolded chimps were tested. Perhaps there are brain waves or exhaled particles which communicate yawning. We also do not learn from this project whether a yawning chimp, caged by itself, will continue to yawn, or whether it lessens or increases. Can the yawn be controlled? Does contagious yawning have a half-life?

Imagine how hard life might be for a chimp which not only was yawning but was gaping? I've seen chimps suffer for lesser social miscues than these.

Most importantly, can this be used by the state department to undermine our foreign opponents by putting yawning people in prominent advertisements to encourage yawning? Might there be a "critical mass" for yawning, so that after a number of chimps, or people, develop contagious yawning, most of the chimp/human colony become yawners? At this point, the shoe may shift to the other foot so that the chimps which are immune from the contagion become the

outliers, possibly with severe repercussions that we can only guess at.

Can one die from yawing? Might gaping be contagious in adults?

In humans yawning, even contagious yawning, appears to die out over time. We don't know this yet for chimps. But what if occasional people who developed contagious yawning continued to yawn? What if it worsened over time? And what if they also developed contagious gaping and nose wiping?

I think there are several possible approaches. Yawning undoubtedly involves dopamine. We know that schizophrenics on drugs that block dopamine receptors are more apt to "catch" yawning than schizophrenics who are untreated. So, blocking a dopamine receptor, presumably D2, which is blocked by all the antipsychotic drugs, mitigates the contagion of yawning. Parkinson disease patients, who have a dopamine deficiency, also yawn more than others, although distinguishing a yawn from routine mouth opening may be challenging. Apomorphine induces yawning in people with Parkinson's disease. Of course, it also induces nausea and vomiting, so that what looks like a yawn may be a partially suppressed act of vomiting. So dopamine agonism may be one approach to treat, or perhaps, prevent the contagion of yawning, but what about refractory contagious yawning? Basic neurophysiology teaches us that the "yawning center," a poorly defined collection of small, spindly, dull-spiny neurons in the pars intergalactica, is hyperactive within 15 ms of yawn commencement, then hypoactive. Early experiments with deep brain stimulation suggests that properly calibrated stimulation effectively stifles yawns, whether contagious or not. But much work needs to be done to determine long-term outcome, and what target will be best if gaping or nose wiping become epidemic in our rapidly aging population. April fool. ❖

Author

Joseph H. Friedman, MD, is Editor-in-chief of the *Rhode Island Medical Journal,* Professor and the Chief of the Division of Movement Disorders, Department of Neurology at the Alpert Medical School of Brown University, chief of Butler Hospital's Movement Disorders Program and first recipient of the Stanley Aronson Chair in Neurodegenerative Disorders.

Disclosures on website

Guidelines for Letters to the Editor

Letters to the Editor are considered for publication (subject to editing and peer review) provided they do not contain material that has been submitted or published elsewhere.

The *Rhode Island Medical Journal* prefers to publish letters that objectively comment on or critically assess previously published articles, offer scholarly opinion or commentary on journal content, or include important announcements or other information relevant to the Journal's readers.

Letters in reference to a Journal article must not exceed 175 words (excluding references), and must be received within four weeks after publication of the article. Letters not related to a Journal article must not exceed 400 words (excluding references).

A letter can have no more than five references and one figure or table. A letter can be signed by no more than three authors. The principal author will be asked to include a full address, telephone number, fax number, and e-mail address. Financial associations or other possible conflicts of interest must be disclosed.