In case you had any doubt that the current anti-vaccination campaign, led publicly by comedian/actress Jenny McCarthy, had abandoned any pretense of interest in reality, behold the most unintentionally insightful self-description I have ever beheld in any field of pseudo-science:

"(Peet) has a lot of balls to come forward and be on that side, because there is an angry mob on my side, and I like the fact that I can say she's completely wrong." - Jenny McCarthy Spectrum Magazine, August '08

In this simple sentence, Ms. McCarthy highlights three facets of the current anti-vaccination movement that bear the close attention of the skeptical community. Let's take them in reverse order:

"I like the fact that I can say she's completely wrong"

This is an assertion about the state of reality, and as such, is a scientific question. The quality of the Wakefield study, which originally proposed a link between MMR and autism, was so poor that I hesitate to call it a study at all. There are no credible studies demonstrating a causative link between autism and vaccines nor any of their constituents, and now there are twenty studies exonerating vaccines from the onerous charge leveled by Wakefield and his proponents.

The latest of these studies, while not being the most damning of the hypotheses, is perhaps the most bitter for the anti-vaccinationists to stomach. The Wakefield study has long represented the final plea of anti-vaccinationists. If only, we are told, Wakefield's study would be repeated, the evidence would bear out their theory. Well, Hornig et al. have granted this wish, replicating the Wakefield protocol while improving its controls and more than tripling the numbers studied, and found… no association between MMR and autism.

Surely you say, this is the straw to break the camel's back, the final nail in the coffin, the next cliché that means that something is over. If Ms. McCarthy's primary motivation is to help autistic children, then in the face of overwhelming evidence she should abandon a failed theory to pursue more fruitful avenues of research. After all, time, money, and attention wasted on a failed theory will only postpone the time when a legitimate cause can be found and viable therapies developed. A rational person would indeed honor the evidence, and in the interest of the children and families afflicted seek the truth wherever it may lie. However, facts will not dissuade Ms. McCarthy and her fellow anti-vaccinationists from their crusade; they are not rational, in fact, in her own words they are:

"...an angry mob on my side..."

A wonderful visual, isn't it? Brings to mind villagers with pitchforks and torches. Such angry mobs are motivated by fear, and are not known for their ability to reason. The use of such a phrase to describe herself and her devotees may be all we need to know. Make no mistake, this is a clear threat to anyone who opposes her point of view, and evidence be damned. If one were to name the greatest impediment to progress in the investigation and treatment of autism, you would be hard pressed for a better candidate than Jenny McCarthy. How, then are we to confront a group that is a prodigious source of misinformation, a growing threat to public health, and will not listen to evidence nor reason? Well, I think we can take a cue from Ms. McCarthy herself:

"(Peet) has a lot of balls to come forward and be on that side…"

Ms. McCarthy is referring to Amanda Peet, an actress and mother who has recently come out not just to support vaccination, but to condemn the position of anti-vaccinationist groups. She has teamed up with the American Academy of Pediatrics, using her celebrity status to counter McCarthy on her own turf, placing her name on the line and her career at risk. (Autism United has called for a boycott of Peet's work, launching a personal attack instead of addressing facts and issues).

In a time where many choose to vote for a President with whom they would like to have a beer, celebrities can have a profound influence on public opinion. While an appeal from authority, or in this case celebrity, is indeed a logical fallacy if the celebrity is presented as the reason to accept a position, Ms. Peet has avoided this misstep, and has instead used her status to act as an effective conduit of sound information. In doing so she has become a champion of science, reason, public health, and yes, autism. The strength of character she has shown, the altruistic sacrifice she continues to make does indeed demonstrate (and I apologize for the crude phrase) "a lot of balls."

Effective confrontation of dangerous pseudoscience and erroneous beliefs in our society cannot succeed if we rely upon science and evidence to speak for themselves. Instead, science should form the unassailable foundation from which we can appeal to our fellow citizens. The very same message coming from different people can have a different effect,

depending upon the audience. Some will respect their pediatrician's expert opinion, others will hold a friend or family member's anecdote in higher regard, and still others will, like it or not, respond to the voice of a celebrity. We all have a role to play in this battle, and as inarticulate screams fill the air, the smell of burning pitch grows stronger, and shadows of pitchforks dance against the wall, we should all be thankful to have the voice of Ms. Peet among us.

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