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Mothers' milk

The safe use of medicines during breastfeeding is not an easy topic to study, but new parents deserve better information on the risks and benefits.

When Janet Woodcock first started to practise medicine nearly 40 years ago, she quickly realized that her training had not equipped her to deal with a common dilemma. New mothers were being encouraged to breastfeed their children, but was it safe to do so if they were taking medication? "I had never received one word of information on that situation," says Woodcock, who now heads the US Center for Drug Evaluation and Research at the Food and Drug Administration (FDA).

Woodcock's patients, she says, were "frantic" to do the best for their babies. But in the absence of data on whether and how a medicine could affect their newborn, mothers were often forced to decide between their own health and their child's. The prevailing medical advice — then and now — was, in case of doubt, to stop breastfeeding.

The situation has improved, she said at a workshop on medications and breastfeeding convened by the FDA late last month — but not nearly enough. Almost 90% of breastfeeding mothers in the United States take a medicine of some sort. For many of those drugs — including commonly used medicines to treat high cholesterol and diabetes — doctors still don't know how to counsel their patients. At the workshop, researchers illustrated how little research is done to answer those questions: a search of grants issued by the US National Institutes of Health (NIH) on the topic shows only a handful of studies, and most focus on HIV medicines.

The dearth of research comes amid renewed massive public-health pushes across the world to encourage mothers to breastfeed. Breastfeeding has been linked to fewer infections and less time in the paediatrician's office, saving parents anxiety and health systems cash. The need is particularly acute in countries where money and clean water to buy and prepare baby formula are limited. More than a decade into the twenty-first century, whether the medicines a breastfeeding mother takes are safe is a question that demands more attention.

It is undeniably difficult to conduct most clinical studies of infants. There are logistical challenges: an exhausted mother may not be keen to attend extra medical visits, and may not want to divulge the medicines she has chosen to take while breastfeeding. There are ethical challenges: clinical trials involving babies are fraught with questions about informed consent, for example. And there are financial challenges, too.

These problems have received little public attention, yet the barriers can be surmounted. At the FDA workshop, several researchers presented their success stories and lessons learned. Seemingly small measures, even changing a nappy or rocking a baby while a mother visits a clinic, can encourage women to make the effort to participate in a study. Ethical questions can be addressed though careful study design, and by paying attention to the benefits of the extra monitoring for both individual babies and for mothers. And in 2014, the FDA took a step towards raising the visibility of the matter by improving drug labels to better display what is known — and unknown — about the safety of a given drug for breastfeeding mothers and their children.

Some researchers are already gathering data and building resources. Researchers at the University of California, San Diego, for instance, have launched the Mommy's Milk Human Milk Research Biorepository — the first of its kind, they say.

At first glance, it might not seem like sexy science for a basic researcher: the details of how particular drugs are metabolized are more the province of drug developers. And industry certainly has a responsibility to address open questions around the medicines that it produces. But basic researchers can contribute, too. Fascinating research avenues involve developmental biology, physiology and the microbiome, all of which could provide relevant information and possibly even advance fields in a fundamental way. Funders such as the NIH have taken laudable steps to address women's health issues at the level of basic research, by ensuring that animal studies include females when possible and relevant. More researchers and funders should build on that momentum and address the impact of medicines on breastfeeding mothers and their children. ■

"Ethical questions can be addressed through careful study design."

Market forces

A European plan to commercialize quantum technologies needs a bold goal.

Nobody ever went broke by underestimating the intelligence of the American public, goes the famous line by the US editor Henry Louis Mencken. It's actually a paraphrase, but the meaning is clear: to make money, it is safe to assume that nobody knows anything.

By rights, then, quantum physics should be extremely profitable. The subject is often used as shorthand for knowledge that is reserved for a small intellectual elite, with everyone else left scratching their heads. As Canadian Prime Minister Justin Trudeau showed last month, the quantum world is so weird that to mount even a half-decent explanation of its basic principles can bring praise and plaudits.

Can this widespread ignorance — the puzzlement at how cats can be both alive and dead, or how particles can exist in two places at once — be capitalized on? The European Commission believes that it can. Next week, it will release a plan for a continent-wide drive to turn the mysteries of quantum physics into hard cash.

This plan, called the European Quantum Manifesto, will be officially released in the Dutch town of Delft, where the commission hopes a