Researchers took cells from rat cerebellums (an area of the brain known to be involved with physical coordination as well as sequencing and planning) and soaked them either in alcohol (ethanol) or in a mixture of alcohol and various levels of PACAP. The cells exposed to alcohol had a higher rate of cell death, or apoptosis. However, cells exposed to alcohol and PACAP were less likely to die. In fact, the researchers found a PACAP dose that completely prevented the alcohol-induced cell death. The researchers then tried waiting a few hours before adding PACAP to the alcohol-exposed cells. PACAP’s beneficial effects on the cells could be found even when added two hours after the initial exposure to alcohol.

“This study gives us a better understanding of how alcohol has a direct damaging effect on the developing brain cells,” says Dr. Gail Andrew, medical director of the Glenrose Rehabilitation Hospital’s Fetal Alcohol Spectrum Disorder Project Clinic in Edmonton. “Many children have problems with sequencing and we know that the cerebellum plays a key role in sequencing. These deficits we are seeing are probably a reflection of cerebellum dysfunction caused by alcohol.” Additional studies, such as those involving functional magnetic resonance imaging (fMRI), might help researchers see the brain damage more clearly.

While the study offers intriguing implications for alcohol’s effects on the developing brain, Dr. Andrew wonders if the idea of a “morning-after pill” for drinkers sends a problematic message to the public. “It gives a false sense of security, and almost a message that drinking in pregnancy is not harmful,” she says. “It does not address the fundamental question of why pregnant women drink adverse amounts of alcohol.” The reasons are extremely difficult to address, particularly among the Aboriginal women Dr. Andrew sees at her clinic. She points out that even if a pill could counteract the effects of prenatal drinking, a woman who drinks heavily may not be able to parent her child properly, leading to a host of psychosocial problems. “Yes, we need to invest in research that looks at the basic brain science. But we need to invest equally in finding out what are the best ways of getting the prevention message across,” says Dr. Andrew. 