

# Perinatal loss and neurological abnormalities among children of the atomic bomb: Nagasaki and Hiroshima revisited, 1949 to 1989.

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# Perinatal Loss and Neurological Abnormalities Among Children of the Atomic Bomb

## Nagasaki and Hiroshima Revisited, 1949 to 1989

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## Abstract

Studies of the survivors of the atomic bombing of Hiroshima and Nagasaki who were exposed to ionizing radiation in utero have demonstrated a significant increase in perinatal loss and the vulnerability of the developing fetal brain to injury. These studies have also helped to define the stages in the development of

injury. These studies have also helped to define the stages in the development of the human brain that are particularly susceptible to radiation-related damage. Exposure at critical junctures in development increases the risk of mental retardation, small head size, subsequent seizures, and poor performance on conventional tests of intelligence and in school. The most critical period, 8 through 15 weeks after fertilization, corresponds to that time in development when neuronal production increases and migration of immature neurons to their cortical sites of function occurs. The epidemiologic data are, however, too sparse to settle unequivocally the nature of the dose-response function and, in particular, whether there is or is not a threshold to damage. If a threshold does exist, it appears to be in the 0.10- to 0.20-Gy fetal-dose range in this vulnerable gestational period.

(*JAMA*. 1990;264:605-609)

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