and type of health care and hospital facilities were determined for each state in the nation. For the first time in many areas, hospital licensure laws were created and implemented. Hospital construction plans were created and approved by the U.S. Public Health Service, and local communities were able to receive large-scale funding in order to construct clinics, health centers, and hospitals. This was of great benefit to the poorest and most rural areas, which typically had no health care whatsoever. Although most of the construction was for general health care facilities, increasing attention was also paid to specialized facilities for tuberculosis, psychiatric and chronic illness units in general hospital facilities, as well as development of rural and public health centers. Between 1947 and 1975, the last year in which Hill-Burton monies were expended, 6,900 hospitals received funding. By the middle of the 1970s, the nationwide average for community hospital beds had risen from fewer than 3 per thousand people to 4.5 per thousand. For the first time, many rural areas had access to health care and hospital facilities.

Although the Hill-Burton Act has had a tremendous and lasting impact on medical care in the U.S., the problem of ensuring adequate and appropriate access to health care for the poorest of the poor in rural and outlying areas remains. In rural areas, particularly in sparsely populated or largely impoverished regions, it is difficult to attract and retain health care providers. Generally, there is often a lack of available public transportation and a scarcity of people who can afford to access care. Some indigent people without significant education or ready transportation in rural areas often find it difficult to manage the requirements for remaining on the rolls of public health care systems, such as Medicaid. Without sufficient paying customers to ensure an adequate cash flow, there is little incentive for health care providers to locate their offices in rural areas.

FURTHER RESOURCES

Web sites

A Web of English History: The Peel Web. "Public Health: Inadequate Cleansing." <http://www.historyhome.co.uk/peel/p-health/clean.htm> (accessed August 29, 2005).

A Web of English History: The Peel Web. "Public Health: No Waste Disposal." <http://www.historyhome.co.uk/peel/p-health/dirt.htm> (accessed August 29, 2005).

The Internet Modern History Sourcebook. "Florence Nightingale: Rural Hygiene." <http://www.fordham.edu/halsall/mod/nightingale-rural.html> (accessed August 29, 2005).

Thalidomide and Congenital Abnormalities

Letter

By: W. G. McBride

Date: December 16, 1961

Source: McBride, W. G. "Thalidomide and Congenital Abnormalities." Letter to the Editor. *The Lancet* 2 (December 16, 1961): 1358.

About the Author: Born in Sydney, Australia, in 1927, gynecologist and obstetrician William G. McBride brought the link between the drug thalidomide and birth defects to the attention of the medical world. In 1962, he was designated "Australian of the Year" for this achievement. Other honors followed and he used some of his prize money to set up Foundation 41, a research institute for the study of birth defects. However, in 1987, he was accused of scientific fraud over his claims that another drug, Debendox, causes birth defects and was struck off the medical register. Later, his position as an obstetrician was restored.

INTRODUCTION

Thalidomide was first synthesized in 1953 and became popular as a sedative prescribed for the morning sickness often associated with pregnancy. By 1958, thalidomide was being heavily advertised and promoted around the world. However, in April 1961, obstetrician William McBride began to notice cases of a rare birth defect involving shortened or absent limbs in babies whose mothers had used thalidomide in pregnancy. At the Crown St. Women's Hospital in Sydney, Australia, where McBride practiced, he soon persuaded the hospital to stop using the drug and wrote of his concerns to Distillers, the company that sold the drug in Australia. At about the same time, pediatrician and geneticist Widukind Lenz noted many similar cases in Germany, where thalidomide was available without prescription.

At this time, physicians assumed that the placenta was impervious to any drugs the expectant mother ingested—unless the drug actually killed her. This belief persisted despite experimental evidence to the contrary. Since thalidomide was not fatal in overdose, it was deemed safe. When thalidomide was approved, drugs were not tested in pregnant animals for their teratogenic effect—that is, for their ability to cause developmental abnormalities in the fetus. McBride wrote the letter below to a leading medical journal,

The Lancet, to alert the medical community to the dangers of thalidomide.

PRIMARY SOURCE

THALIDOMIDE AND CONGENITAL ABNORMALITIES

SIR,—Congenital abnormalities are present in approximately 1·5% of babies. In recent months I have observed that the incidence of multiple severe abnormalities in babies delivered of women who were given the drug thalidomide ('Distaval') during pregnancy, as an anti-emetic or as a sedative, to be almost 20%.

These abnormalities are present in structures developed from mesenchyme—i.e., the bones and musculature of the gut. Bony development seems to be affected in a very striking manner, resulting in polydactyly, syndactyly, and failure of development of long bones (abnormally short femora and radii).

Have any of your readers seen similar abnormalities in babies delivered of women who have taken this drug during pregnancy?

Hurstville, New South Wales.

W. G. MCBRIDE.

A young thalidomide victim, born without arms, clutches a bouquet with her toes as she presents it to Princess Anne of Great Britain in 1972. ©BETTMANN/CORBIS.

SIGNIFICANCE

McBride's warning concerning the teratogenic effects of thalidomide saved countless babies from being born with birth defects. However, the drug remained on the market for some time following McBride's warning, which accounts for the fact that there are still some 8,000 thalidomide survivors in the world today.

The observations of McBride and Lenz were to have far-reaching effects on the pharmaceutical industry. They were astute enough to notice rare and unusual conditions occurring in their patients and to spot patterns and connections with factors such as drug exposure. After thalidomide, it became mandatory to test new drugs on pregnant animals. Doctors became far more aware of the potential teratogenic effect of drugs and were more careful about the drugs they prescribed to pregnant women.

In general, the drug regulatory authorities acquired more sweeping powers after the thalidomide tragedy. One important development was the establishment of systems for post-market drug surveillance. That is, once a drug is on the market, it is monitored for any new side effects that emerge in the general population. These new side effects are reported through the physician. As a result of these post-marketing surveillance efforts, several drugs have been withdrawn on safety grounds. Unanticipated drug side effects still occur and they still harm or even kill vulnerable people. However, tighter regulation has undoubtedly improved patient safety.

Meanwhile, thalidomide has enjoyed something of a resurgence as a treatment for leprosy and multiple myeloma. However, it is no longer prescribed to women who are pregnant or who may become pregnant. Scientists now know that other drugs are as dangerous to an unborn child as thalidomide is. One such drug is isotretinoin, which is used in the treatment of severe acne. A woman actually needs to provide proof of a negative pregnancy test before she can be prescribed isotretinoin, according to the U.S. Food and Drug Administration. While on the drug, she must use an effective method of contraception. The fetus is most vulnerable to medication exposure through the placenta in the first three months of pregnancy. In the thalidomide case, one in five women who had taken the drug between thirty-seven and fifty-four days of pregnancy gave birth to a child with birth defects.

FURTHER RESOURCES

Books

Lock, Stephen, John M. Last, and George Dunea, eds. *The Oxford Illustrated Companion to Medicine*. Oxford: Oxford University Press, 2001.

Web sites

James Lind Library.org. "Thalidomide: An Unexpected Adverse Effect." <http://www.jameslindlibrary.org/trial_records/20th_Century/1960s/mcbride/mcbride_commentary.html> (accessed November 21, 2005.

Famine and Public Health

Picture

By: Dempster

Date: January 21, 1970

INTRODUCTION

Famine is the extreme lack of food and nutrients, often resulting in widespread disease and death. A particularly large number of famines occurred during the 1900s, and into the twenty-first century, despite the world's extensive social, economic, and technical advances during the same time period. Although efforts have been made to combat and prevent famines, food shortages around the globe, due to such factors as war, drought, and ill-focused political decisions, continue to take a toll on the lives of some of the world's most impoverished inhabitants.

Acute hunger can cause people to die of starvation directly, but there are many more individuals who may survive famine, only to be faced with the health problems that often accompany undernourishment and vitamin and mineral deficiencies. Common effects of malnutrition include stunted growth, weakness, and susceptibility to disease. People who are malnourished often have poor concentration, which exacerbates the problem of hunger, as it is difficult for hungry people to work in fields, or earn money for buying food. Pregnant women, those who are breast-feeding newborns, and children are the most vulnerable to hunger related problems. Over 150 million children, worldwide, below the age of five, are said to be underweight. Eleven million children under the age of five die each year, with over half of the deaths directly related to malnutrition. Typically these children do not die from starvation itself, but rather from the diseases that strike a weak and vulnerable body, whose immune system is likely unable to put up a defense. The four most common childhood illnesses in developing countries are diarrhea, respiratory illness, malaria, and measles.

All parts of the globe are known to have experienced famine. The blockade of German trade ships by Britain and France, along with a harsh winter in 1916–1917, left several hundred thousand Germans dead prior to the start of World War I. Five to eight million people in Ukraine died from famine during the 1930s, when the Soviet Union seized agriculture outputs in hopes of exporting more food to bring in money for industrialization. The Chinese famine between 1958–1962 is considered one of the worst in history, with estimates of up to thirty million people dying as China's leader, Mao Ze-dong, implemented a plan of rapid industrialization in rural areas.

Famines occurring in Africa have received the most extensive international publicity. During Nigeria's civil war with Biafra between 1968–1970, at least one million civilians died from hunger and fighting. The world was shocked by photographs of starving children with distended stomachs caused by protein deficiency. Between 1984–1985, drought throughout Ethiopia impacted 120 million people, with scenes of starvation seen on television sets throughout the western world. Fundraising events all over the world led to the arrival of some emergency food aid to Ethiopia, but bottlenecks at the ports, and poor quality roads slowed down relief efforts. Throughout the 1990s and into the twenty-first century, civil war between the Arab and black Sudanese have led to food crises, particularly in the Darfur region of Sudan, where 3.4 million, or half of the region's population have been forced from their homes and farmlands. Throughout various regions of Africa, ongoing political unrest, unreliable rainfall, and poverty keep millions of people at risk of hunger.

PRIMARY SOURCE

FAMINE AND PUBLIC HEALTH

See primary source image.

SIGNIFICANCE

The United Nations (UN) classifies 1.2 billion people below the international poverty line, living on less than one dollar per day. Many of these people experience regular food shortages, while others are just barely able to meet their daily food requirements. All families under the poverty line are vulnerable to shocks such as droughts, earthquakes, and wars, all