Cancer Incidence in Atomic Bomb Survivors.

Part III: Leukemia, Lymphoma and Multiple Myeloma, 1950–1987

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INTRODUCTION

By the late 1940s there were suggestions of an increased risk of leukemia among the survivors of the atomic bombings of Hiroshima and Nagasaki. These early observations led to the establishment of a registry of cases of leukemia and related disorders, including lymphomas, among atomic bomb survivors (1). In 1952 Folley et al. (2) reported clear evidence of an excess risk of leukemia, making this disease one of the first long-term health effects to be noted in this population. The Leukemia Registry data have been the basis of a series of reports (3–5) that have helped to clarify our understanding of the risks of radiation-induced leukemia. Since their establishment in 1958, the Hiroshima and Nagasaki tumor registries have also collected information on hematopoietic and lymphatic malignancies in these cities.

The most recent comprehensive reports on leukemia risks in the atomic bomb survivor population appeared more than 10 years ago. These reports considered the nature of the dose response (6), general patterns of leukemia incidence in the Life Span Study (LSS) cohort from 1950 through 1978 (7), the distribution of onset times for leukemia cases reported to the Leukemia Registry between 1946 and 1975 (8), and

1 Abbreviations used: AHS, Adult Health Study; ALL, acute lymphocytic leukemia; AMFIT, Additive Multiplicative Fitting Program for analysis of data for cohort survival [from Epicure User's Guide (see ref. 26); AML, acute myelogenous leukemia; ATB, at time of bombings; ATL, adult T-cell leukemia; DATAB, computer program (from Epicure User's Guide (see ref. 26); DS86, Dosimetry System 86; CL, chronic lymphocytic leukemia; CML, chronic myelocytic leukemia; EAR, excess absolute risk; ERR, excess relative risk; HTLV, virus known to cause adult T-cell leukemia; FAB, French-American-British classification; ICD-O, International Classification of Diseases—Oncology; LSS, Life Span Study; NHL, non-Hodgkin's leukemia; NIC, not in cities; RERF, Radiation Effects Research Foundation; T65D, tentative 1965 dosimetry; T65DR, tentative 1965 dosimetry revised.