

## SUMMARY FACTSHEET HUMAN EXPERIMENTATION - SFS5.001

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Project Category: Other Teletherapy

Funding Source(s): AEC

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Institution(s): (1) University of California, San Francisco  
(2) University of Arkansas  
(3) (4) Argonne Cancer Research Hospital  
(5) Univ. of Michigan  
(6) Oak Ridge Inst. of Nuclear Studies  
(7) CEER, Puerto Rico

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Objective(s) of Project: Development and Evaluation of Teletherapy Methods

**Short Description:** (1) During the years 1956 to 1958, 67 patients were irradiated with 70 MeV x-rays from the synchrotron. Doses were 5250 R in 5 weeks or 6000 R in 6 weeks. Patients with bronchogenic carcinoma, tumors of the oral cavity and carcinomas of the cervix were treated.

**Follow-up Data:** In August 1958, of the 67 patients treated, 25 had died within 2 years of starting treatment. A subsequent report indicates that as of June 1962, 310 patients had been treated but survival data is not given.

(2) A cobalt-60 teletherapy unit was used to treat 227 patients with various types of neoplasms (Progress report dated July 1956).

(3) From 1972 to 1979, Hodgkin's disease and other lymphomas were treated by a combination of laparotomy to improve staging and diagnosis, and carefully planned radiation to indicated organs of involvement. A number of malignancies were treated with ultra high dose rate electrons to study the effects of this radiation. Chromium-51 radioactive permanent implants were also evaluated. Head and neck malignancies were subjected to combined treatment schedules, including drug pre-treatment and split-course radiation. The sensitizing qualities of hydroxyurea and cytosine arabinoside were tested on a hair follicle indicating system before being tested on animal tumors and patients.

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(4) From 1963 to 1965 joint study was being carried out in conjunction with the Ear, Nose, and Throat Clinic in an attempt to evaluate the effects of pre- and post-operative radiation treatment of various malignancies using the Van de Graaff x-ray generator, the rotational cobalt-60 machine, and the linear accelerator electron beam. All patients were seen in the ENT Clinic and randomized for treatment schedules. It was believed that some lung malignancies were made operable by irradiation.

**Follow-up Data:** One patient having an inoperable gastric malignancy treated with a combination of colchicine and radiation was still alive and gave no evidence of the disease after 2 years.

(5) During the period 1952-1966, cobalt-60 and cesium-137 teletherapy units were used in a comparative clinical evaluation in the radiation treatment of malignant disease. Modification of a theratron-B to permit clinical employment of a cesium-137 source was achieved and the radiation from this isotope was applied clinically to evaluate the potential role of this radiation in clinical radiotherapy in comparison with cobalt-60 radiation and past and current experience with orthovoltage radiation.

(6) In 1966, to determine the effects of cobalt-60 teletherapy on certain kinds of cancer two patients were given 500 R to spleen and liver. One patient showed no hematologic changes when the liver was irradiated, but a profound fall in circulating white blood cells occurred after irradiation of the spleen. The other patient responded to liver irradiation in a way undistinguishable from the changes occurring after spleen irradiation; in both instances the peripheral white count went from about 100,000 to 20,000 with a fast return to pretreatment levels.

(7) During the period 1964-1967 in a study of the optimal tumor dose in radiation therapy of cancer of the esophagus, half of the cases treated received cobalt teletherapy doses of 5000 roentgens in four weeks and the other half received doses of 6000 roentgens in six weeks. Disappearance of dysphagia and twelve months survival were compared in each group.

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