

Summary of Radiation-related Medical Examinations

Introduction: Under Public Law 95-134, the Brookhaven National Laboratory medical program provides for diagnosis and treatment of radiation-related disease among the exposed populations of Rongelap and Utirik. While considerable effort is spent on the care of acute and chronic illnesses of any etiology, we have in place a program which is oriented toward the problems posed by their 1954 radiation exposure. The exposed population must be considered at increased risk for malignant disease, and chief among the responsibilities of an ongoing program is a cancer-related evaluation. There may also be additional risks unrelated to malignancy. Our current strategy is outlined below.

1. A cancer-related examination is provided to the exposed Marshallese, using as a guide the current recommendations of the American Cancer Society. Our program now includes:

- a. A review of systems and a complete medical examination.
- b. Advice on decreasing risk factors and on self-detection of lesions.
- c. Pelvic examinations with Pap smears.
- d. Mammography
- e. Flexible sigmoidoscopy

f. Stool testing for occult blood.

2. As we construe the intent of PL 95-134, we feel the examinations and procedures listed under (1) should be performed more frequently than proposed by the American Cancer Society for populations that are not at increased risk for cancer. Therefore, the physical examinations should be annual and should include a pelvic examination and Pap smear for all exposed women. Annual mammograms should begin at age 40. Rectal examinations and stool testing for occult blood should be done annually, also starting by age 40. Flexible sigmoidoscopy should be offered prior to age 50 and repeated every other year, or more frequently if clinically indicated.

3. The delayed effects of radiation exposure are generally considered to be limited to malignant disease. The exposed Marshallese, however, must receive additional attention for two reasons. First, their radiation exposure was of a unique type, and a tabulation of risks derived from the statistics of other irradiated populations may not adequately cover the range of late consequences that could befall the exposed Marshallese. Second, we now have data collected by our program which suggests previously unsuspected late effects of radiation exposure in man. These include an increased incidence of pituitary neoplasms and a trend toward lower blood cell counts. Another effect, hypothyroidism, has been documented in some of the Rongelap exposed. We feel, therefore, that nonmalignant endocrine neoplasms, endocrine dysfunction, and hematologic abnormalities need to be actively sought; the necessary procedures should be added to the requirement of any examination schedule of exposed persons.

Currently, we provide the following:

- a. Annual thyroid examinations by an endocrinologist.
- b. Thyroid function testing for all exposed persons, annually for the people of Rongelap and biennially for those of Utirik.
- c. Thyroid suppression (Synthroid) for all the Rongelap exposed and for selected persons in the Utirik group. The intent is to decrease the probability of thyroid malignancy.
- d. Serum prolactin levels on all exposed persons every three years (the most common pituitary tumor is a prolactinoma).
- e. Annual complete blood counts, including a platelet count.
- f. At irregular intervals we search for "para-neoplastic" evidence of neoplasia, such as monoclonal spikes on serum protein electrophoresis (myeloma now appears to be inducible by radiation) and abnormal serum calcium levels (elevated in certain malignancies and parathyroid adenomas, or depressed, as has been described as a possible late effect of radiation exposure in other populations).

4. We also check for clinical evidence of depression in immunocompetence. There is no good evidence, from our more recent surveys of serum immunoglobulins, lymphocyte counts, toxoplasma antibodies,

serologic markers of hepatitis B, or tuberculin sensitivity, that the exposed Marshallese have a significant impairment of their immune mechanisms. The matter is not settled, however, and continued surveillance for evidence of increased risk for unusual manifestations of infectious disease is a part of our program.

5. The treatment of any neoplastic process which could conceivably be radiation-related is done in referral facilities, generally in Honolulu. There are few lesions which we feel could be adequately treated in the health facilities of the Republic of the Marshall Islands. We also refer outside of the Marshalls almost all diagnostic workups for malignancy. For example, if the cause of persistent occult blood in the stool is not identified by our medical team, the patient would receive x-ray studies, colonoscopy, etc., at one of the excellent medical facilities in Honolulu. We then adhere to their therapeutic recommendations and re-evaluation schedule.