

PNL-9296

DATE September 21, 1966

TO R. S. Paul

FROM J. J. Fuquay *JJ Fuquay*

SUBJECT A STUDY OF IRON BALANCE AND TRANSFER DURING PREGNANCY AND EARLY INFANCY IN IRON DEFICIENT ESKIMOS

CC: JM Nielsen - 2
JJ Fuquay - 2

The results of our studies of fallout ⁵⁵Fe in humans indicate that investigations of iron balance in pregnancy, placental iron transfer, and iron balance in infancy are feasible using the existing body burdens of ⁵⁵Fe in certain groups of Alaskan Eskimos. This study is part of our Schedule 189 project entitled, ⁵⁵Fe in human populations of the world approved for Fiscal Year 1967 and is a cooperative study with Dr. Jon Aase of the Arctic Health Research Center at Anchorage, Alaska. The proposed study is detailed in an attachment to this letter.

The study will involve taking blood samples from mother-infant pairs in Alaskan hospitals and determining the ⁵⁵Fe content of the samples. We will participate in the planning of the study, the analysis of the samples, and the publication of the results with Dr. Aase acting as the senior investigator and author. We will have no direct contact with the patients, and our role is very similar to other recent studies where we have obtained blood samples from blood banks and other institutions. It is not expected that there will be any transfer of funds from Battelle to the Arctic Health Research Center.

We feel this study is a natural extension of our work with no additional risk, and we request your concurrence with our decision to participate in this study.

REPOSITORY PNL

COLLECTION General

BOX No. 3156

FOLDER Iron Balance + Transfer during pregnancy

JJF:JMN:flb

Attachment

Please indicate your approval to proceed by your signature on the approval line below.

APPROVED: *RS Paul*
Associate Director

10/19/66
Date

THE TRANSFER AND BALANCE OF IRON BETWEEN MOTHER AND INFANT

Purpose of Study

By using the existing ^{55}Fe body burdens in some groups of Alaskan Eskimos we hope to establish the amount of disequilibrium existing between the iron in the mother and the iron in the fetus. This type of study is ideally suited for a radioactive isotope experiment, but has only been done in animals because of reticence to expose the human fetus to the radiation from an added tracer. Nuclear fallout has now added the tracer ^{55}Fe in sufficient amount to allow the study to be made. These Eskimos are normally deficient in iron and during pregnancy the mother takes supplemental iron in the form of pills. The mothers will have a ^{55}Fe body burden of about 1 μCi which will be deposited mostly in the red blood cells or as storage iron in the liver or pancreas. It is known that there is very little transfer of whole red blood cells from the mother to fetus so analysis of a sample of blood from the mother and baby at birth (cord blood) should tell how much of the iron came from the mother's iron stores and how much came from the supplemental iron taken by the mother. This will give significant information, not presently known, about how independent the human baby blood supply is from that of the mother.

Procedure

Personnel at the Alaska native hospitals will collect blood samples from pregnant patients at the end of the first trimester and at birth. They will collect blood samples from the baby at birth from the cord blood and at 4 to 6 months of age. The samples will be sent to Battelle-Northwest for ^{55}Fe analysis. Duplicate blood samples will be obtained from at least 50 mother-infant pairs. The studies in early infancy may be expanded if such things as transfer of iron to baby through the mother's milk look significantly interesting. The data obtained from this study will be analyzed by personnel from Battelle-Northwest and Arctic Health Research Center and will be published as a co-authored paper from both institutions.

A copy of Dr. Aase's most recent letter concerning this project is attached.

Attachment

1260928



DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

September 8, 1966

BUREAU OF STATE SERVICES
ARCTIC HEALTH RESEARCH CENTER
945 - 6TH AVENUE
ANCHORAGE, ALASKA 99501
TELEPHONE BR 2-1661

Mr. H. E. Palmer
Senior Research Scientist
Radiological Sciences Section
Battelle-Northwest Laboratories
P. O. Box 999
Richland, Washington 99352

Dear Earl:

It was good to talk to you on the telephone yesterday, and I'm glad we'll be able to get together on the 15th. In checking schedules here, I'm afraid that the daytime flight from Anchorage would arrive too late to catch the afternoon flight to Pasco from Boeing Field. While I could take the midnight flight down and then get on the 9:15 plane to Pasco, I wonder if it would be imposing too much to ask you to meet me in Seattle. If you had some other things to take care of at the University, I could meet you there. I'd imagine we would need only an hour or two together to work out a protocol.

Briefly, here's what I had in mind. The study could be divided conveniently into three parts, and might warrant three separate reports:

1. Iron Balance in Pregnancy
2. Placental Iron Transfer
3. Iron Balance in Infancy

The first of these probably has the least general interest from the medical point of view, since several studies exist using Fe^{59} , but it would be so easy to include this extra data that we might want to nail down the values for this population.

We would need to analyze a total of four blood specimens from each mother-infant pair. These would include one prenatal sample from the mother, one maternal specimen, and one cord-blood specimen at the time of birth, and a sample from the baby at four to six months of age. I'd think we might start with about fifty such pairs, collected over about 10-12 months.

It has been suggested that the present load of research work at the Bethel Hospital might make establishment of a new project there difficult, although we would have the best surveillance available. On the

1260929

Mr. H. E. Palmer

-2-

September 8, 1966

other hand, the smaller hospital at Kanakanak serves a similar population of fish-eating Natives, and might serve our purposes pretty well. We might want to analyze some preliminary bloods from this area to see what the baseline levels of Fe^{55} are, however.

I'm really looking forward to getting together on the 15th to talk about these projects, and I hope you'll feel free to let me know whether meeting in Seattle will be inconvenient for you. If so, I'm sure I can come down earlier or make other arrangements.

Best regards,

Jon

Jon M. Aase, M. D.
Surgeon, USPHS

lk

1260930