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UNITED STATES ENGINEER OFFICE
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IN REPLY REFER TO EIDMK-6
IB-31

11 July 1946

Subject: Minutes of Sub-Committee Meetings.

To: Members of the Interim Advisory Committee on Isotope Distribution Policy.

Inclosed are minutes of the initial meetings of the Sub-Committee on Allocation and Distribution and the Sub-Committee on Human Applications.

The recommendations of these sub-committees have been given the general approval by Dr. Lee du Bridge, Chairman of the main committee. Allocation and distribution will be effected according to the principles set forth in these minutes unless modifications are suggested by the Committee members. As the need arises, policy decisions can be obtained from the main committee.

Several allocations of radioisotopes have already been made and the materials can be shipped as soon as the supplier receives the formal purchase order and the signed "Agreement for Order and Receipt of Radioactive Materials". It is expected that the distribution program will soon begin to "roll".

Paul C. Aebersold
PAUL C. AEBERSOLD,
Secretary,
Interim Advisory Committee on
Isotope Distribution
Policy.

2 Incls.:
1. Minutes of Meeting on Allocation
2. Minutes of Meeting on Human Application.

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ADVISORY SUB-COMMITTEE ON HUMAN APPLICATIONS

of the

INTERIM ADVISORY COMMITTEE ON ISOTOPE DISTRIBUTION POLICY

Minutes of Initial Meeting - Held June 28, 1946; Oak Ridge, Tennessee

Members Present: A. H. Dowdy, Chairman

G. Failla

Member Absent: H. L. Friedell

Others Present: P. C. Aebersold, Secretary of the Committee

W. E. Cohn, Consultant on Clinton Laboratories Production

K. Z. Morgan, Consultant on Health-Physics

Main Items Discussed:

1. Report on the Meeting of Sub-Committee on Allocation
2. Functions of the Sub-Committee on Human Applications
3. Production Allocation for Therapeutic and Diagnostic Uses
4. Allocation of Available Materials by Institution
   a. Regular basis
   b. Temporary irregular basis
5. Allocation of Available Materials by Intended Use
   a. Types of Uses
   b. Specific Uses for Certain Isotopes
6. Mechanism for Handling Requests

1. Report on Meeting of Sub-Committee on Allocation

Dr. Aebersold reported on the discussions and conclusions of the initial meeting of the Sub-Committee on Allocation. These are contained rather completely in the final minutes of the meeting and will not be repeated here. The conclusions on the related functioning of the two sub-committees are given in the next section.

2. Functions of the Sub-Committee on Human Applications.

These functions as interpreted by the Sub-Committee on Allocation were reviewed (see Conclusions on Discussion Item 4, Minutes of Sub-Committee on Allocation). The recommendations of the Sub-Committee on Allocation were adopted. One comment was added, however; namely, although it is desirable that the Sub-Committee on Allocation make the priority ratings on requests for tracer (non-diagnostic) experiments in humans, members of the Sub-Committee on Human Applications can recommend high priority for experiments they feel particularly worthwhile.

Functions of the Sub-Committee, other than the exercising of a veto power on allocation for human application, were then considered. These logically are:

a. Recommend for main committee action the relative production effort to be placed on isotopes for therapeutic and diagnostic application.

b. Recommend for Isotopes Branch action the allocation of available materials for therapeutic and diagnostic applications.

These functions are considered in the next sections.

3. Production Allocation for Therapeutic and Diagnostic Use.

At the present time a discussion of the production effort to be placed on radioisotopes for therapeutic and diagnostic uses as compared with other uses narrows down to a consideration of the production effort to be placed on a few isotopes, which are at present in most apparent demand, namely I 131, P 32, Sr 89, 90, Co 60 and Na 24. This does not mean that radioisotopes other than these five will not be useful for therapeutic and diagnostic purposes, but only that such usefulness of others is as yet highly investigational and problematical. The demand for other radioisotopes for human use, even if for the purpose of finding out therapeutic and diagnostic possibilities, will be initially for tracer investigations and will probably not involve routine regular supplying of material.

I 131. This isotope, because of its very specific absorption in thyroid tissue, gives promise of being more uniquely useful (i.e., more specific in results in certain malfunctions) than may be the case for the other four above listed isotopes. Some of the previous successful therapeutic applications of radioiodine have been with I 130, which has only a 12.6 hour half-life (not made with the pile). The 8 day I 131 requires a different dosage technique and there is some question concerning possible effects on the kidneys of the longer period radiation. Nevertheless, I 131 has promise of being quite useful in certain carcinomas of the thyroid and in exophthalmic goiter (Grave's disease).

Fission production I 131 is not as readily available a source of radioiodine as the uninitiated might believe. Irradiated uranium is generally "cooled" for a fairly long time to avoid the hazards and other difficulties of working with "hot" material. A great deal of the radioiodine is therefore necessarily lost by decay alone. The Clinton pile is used mainly for experimentation and cannot be considered a regular source of discharged uranium. Recovery of radioiodine from the plutonium process at Hanford would require a considerable

installation (also time). Rapid shipping of radioiodine from Hanford for processing and distribution at Clinton would be expensive and at best several half-lifes might pass before actual delivery to the requestor. This adds up to making irradiated tellurium the most readily available source of I 131.

The limitation on I 131 from Te at present is in manpower and extraction facilities. Dr. Cohn estimated that up to 50 mc/day of carrier free separated I 131 could be made by pushing the present extraction facilities. More I 131 than this might be made available in irradiated Te to those with satisfactory extraction facilities. In the future the limitation on I 131 production may be the competition for pile neutrons in the making of other demanded isotopes.

The sub-committee felt that this I 131 production should take care of the most legitimate, immediate demands. As the demand becomes more clear in the future, the apportionment of production effort (neutrons absorbed plus manpower) between various isotopes and their uses can be determined by the main committee.

P 32. The high specific activity most generally demanded for therapeutic use of this isotope can be met by the Clinton pile only by the irradiation of sulphur. In order for this method of production not to detract seriously from the pile production of other radioisotopes, not more than two curies/month of P 32 can be produced. Routine large scale facilities are under development for the extraction of P 32 from S, but at present P 32 in quantities for clinics can be furnished to requestors only in the irradiated S. Some quantities of extracted P 32 will now be available for tracer work, and later increasing amounts for therapy. The schedule and rate of extracted P 32 production cannot be predicted until more experience is gained in production development.

Since not many clinics have facilities for extracting P 32 from irradiated sulphur, the allocation of production effort on P 32 will not become a problem until extracted P 32 can be supplied. The anticipated production should supply 20 or more qualified clinics for the most appropriate uses of the isotope.

Sr 89,90. This fission-product radiostrontium may be used as a substitute for P 32 in certain cases and may have especially desirable irradiation properties of its own. Sr 89 has a 53 day half-life which is sufficiently long to make it necessary to be cautious with the quantities administered. Sr 90 of about 25 year half-life will also be present in radiostrontium extracted from fission products. Since Sr 90 decays to Y 90, which has a short half-life, the Sr 90 can result in a considerable rate of beta irradiation for a long period of time. If the order of not more than 1% of the beta disintegrations result from the presence of Sr 90, the material can probably be used safely for therapeutic investigations. This may mean the processing of rather newly irradiated uranium (not "cooled" long enough for Sr 89 to decay appreciably). Since the therapeutic techniques of using this material will have to be developed and since equipment is already available at Clinton Laboratories for its extraction, it is not anticipated that allocation of production effort will be an immediate problem in making Sr 89,90 available for therapeutic investigations.

Co 60. The demand for this 5.3 year half-life isotope is mainly for use as a substitute for radium gamma ray sources. Co 60 has an advantage over radium in some uses because of its almost monoenergetic spectrum of gamma radiation (1.1-1.3 Mev) and its soft monoenergetic beta rays (0.3 Mev). The therapeutic

demand would be .) substitutes for radium needle. nd packs for cancer therapy. Although this may be a practical and worthwhile application of an induced radioisotope, it is not an application which can be uniquely performed by the use of this radioisotope. Radium and supervoltage X-rays are now available for cancer therapy on a rather large scale. If the Co 60 sources could be made cheaper and more convenient to use than radium sources, there would be a legitimate demand for Co 60 which might take a sizable fraction of the overall production effort. It is not anticipated that the problem will be immediate, since a dosage and application technique would have to be developed for Co 60 sources which might take considerable time. The sub-committee voted not to consider allocation of Co 60 for therapeutic use until it became clear that production for this purpose would not interfere with production for high priority applications of radioisotopes.

Na 24. This 14.8 hr. half-life isotope is useful for giving whole-body irradiation of patients and for studying blood circulation in certain diagnostic applications. Because of its short half-life there would be considerable difficulty in efficient wide-scale distribution. The yield of the isotope is rather high, however, and the production relatively easily achieved. It is not anticipated therefore that the allocation of production effort on Na 24 for therapeutic and diagnostic uses will be an immediate problem.

It appears, consequently, that the most immediate problem of allocation of production effort will arise for I 131. As soon as extracted P 32 is available the problem may also arise in this case. The problem might not become acute until more institutions have staffs and facilities suitable for therapeutic application of such isotopes. When the necessary production effort to meet such demands begins to interfere appreciably with that for more fundam ental uses of radioisotopes, a policy decision on allocation of production effort will have to be made by the main committee. The sub-committees may however make recommendations on such matters.

In case confusion may arise as to whether or not a request is for therapeutic purposes, the following definitions were made;

a. Therapeutic use - a use in which there is a definite attempt to cure or alleviate a malfunction. (A tracer dose in general, even if used in studying a malfunction, could not be seriously considered as affording radiation treatments.)

b. Diagnostic or therapeutic test - a test made in a human being, which may be made with larger than usual tracer amounts, to determine malfunction and/or the desirability of some form of treatment (Examples: circulation in a gangrenous extremity and uptake of I 131 in a carcinoma of the thyroid.)

4. Allocation of Available Materials by Institution.

a. Regular basis

As pointed out previously the production and extraction of P 32 and I 131 for therapeutic use is still under development. No satisfactory schedule and rate for the production of the extracted isotopes can now be given. It is obviously too early therefore to make committments concerning a regular or "permanent" rate of allocation of these isotopes, or for that matter any others to be used in large quantities.

The sub-committee recommended that, before any allocation committments are made for a regular clinical supply, a survey be made of the actual needs of the clinical institutions which are known to be carrying on a program or to have expressed a desire to initiate a program for the proper clinical use of radioisotopes. Although some sketchy surveys have been made previously, the proposed one will be more thorough. Moreover, it will be based on actual demands, inasmuch as price lists, procurement regulations, and request forms will be furnished the institutions canvassed.

A list of the clinical investigation institutions that will be included in the survey is appended. It is not known to what extent other institutions may be interested and qualified.

Dr. Dowdy submitted the following recommendations as a basis for radioisotope distribution for human applications. They were wholeheartedly adopted by those present. They will be made known to the canvassed institutions as being the policies of the sub-committees on allocation and on human applications in regard to the clinical use of radioisotopes. Only those institutions which can qualify under those policies will be eligible for allocation. The amounts regularly allocated would be apportioned on a fair basis among the institutions finally selected on the basis of the survey.

Suggested Recommendations on Allocation for Human Applications:

"The following recommendations, if made policies by the Interim Advisory Committee on Isotope Distribution Policy, I believe, would greatly facilitate the equitable and effective distribution of isotopes for human use.

(1) The Committee should initially select a group of accredited medical schools, hospitals, and clinics who may be eligible to receive radioactive isotopes.

(2) Each selected hospital, medical school, and clinic should be invited to appoint a local committee composed of a Chairman and whatever number of members they should see fit to pass upon all requests originating from their institution.

(3) All isotope requests to the Isotopes Branch of the Research Division of the Manhattan District for human use for their particular institution should be initiated by the local Chairman.

(4) The Committee should recommend to the selected institutions that the membership of the local committee include (a) a physician well versed in the physiology and pathology of the blood forming organs; (b) a physician well versed in metabolism and metabolic disorders; (c) a competent biophysicist, radiologist, or radiation physiologist qualified in the techniques of radioisotopes.

These recommendations, if carried out, would have the following advantages:

(1) The Interim Advisory Committee would at once circumscribe the distribution of radioactive isotopes to well-qualified institutions.

(2) The local institutional committee would accomplish the following: (a) reduce the correspondence to one individual per institution. This would facilitate intelligent application requests; (b) facilitate the institution's contractual relationship with the District; (c) in case of a limited supply of any particular isotope, it would allow the institution to apply its own priorities.

(3) It would insure a more judicious and safe use of available material.

(4) The efforts of the Sub-Committee on Human Applications would be more economically expended and the responsibility for an equitable local distribution would be shared by the hospital, medical school, or clinic involved."

/S/ Andrew H. Dowdy,
Andrew H. Dowdy, M.D., Chairman.

The institutional survey and the adoption of the above recommendations will enable a system of allocation to be adopted as follows:

(1) Institutions will then be selected by the Sub-Committee on Human Applications as qualified to undertake therapeutic and diagnostic investigations with each of the following isotopes:

a. I 131

b. P 32

c. Sr 89,90

d. Na 24

These are not mutually exclusive; some institutions may qualify on all four.

(2) The total actual demand for each of these isotopes will then be made known to the Clinton Laboratory authorities who will decide what level of production they may be able to maintain on each. In case the demands for all four cannot be met, the relative weight to be assigned to each isotope for therapeutic and diagnostic purposes will be recommended by the Sub-Committee on Human Applications to the main Committee for final decision. It is assumed that insofar as feasible Clinton Laboratories will align the relative production with regard to the assigned weighted values.

(3) If, on the basis of 2 above, the production level of an isotope will not satisfy the actual demands of all the selected institutions, the Sub-Committee on Human Applications will make a priority selection or rating among the groups qualified for each isotope, such that the demands of the highest priority group can be met. Each institution of the first priority group will be made an allocation of up to a certain limit per period (week, month, etc., depending on isotope), insofar as general

committments can be made by Clinton Laboratories for such a supply. The second priority group will receive material on an irregular allocation basis, when and if available above the amounts actually ordered by the top priority group from its allotment.

(4) Institutions newly requesting will be passed upon by the Sub-Committee on Human Applications for each isotope they wish to use. Once approved for the use of an isotope, the institution can receive this isotope regularly insofar as the supply and allocation will permit, provided the local "isotope committee" is maintained.

(5). The local "isotope committee" at the institution will decide upon the allocation of the received material for various clinical investigations at the institution. The Sub-Committee on Human Applications will not therefore have to decide priorities on individual cases and uses. Once the overall allocation is made to the institution the local isotope committee governs the applications.

(6) The material is not to be distributed by the institution to secondary users outside the direct observation of the institution;(i.e., not to private doctors outside the staff of the institution or to other institutions unless passed upon by the Sub-Committee on Human Applications as qualified to use the particular isotope).

(7) If the pool of an isotope obtained for anticipated therapeutic and diagnostic needs is not being used up as expected and is in danger of loss by decay, safe amounts of the isotope can be allocated by the local isotope committee for tracer investigations within the institution, or the Secretary of the Sub-Committee on Allocation can give approval for transfer of the material to another institution, provided all users are covered by a properly negotiated "Agreement for Order and Receipt of Radioactive Materials".

b. Allocation on Temporary Irregular Basis.

Until the recommended overall survey is made concerning a regular allocation to qualified institutions, it was considered highly desirable by the sub-committee in the meantime to use whatever materials become available for allocations on a temporary basis (no committment on routine rate of supply).

Permission to allocate I 131 was approved, without committment regarding a regular rate of supply until completion of the institutional survey, to the following clinical institutions:

(1) University of California Medical School and Hospital
(2) University of Chicago Medical School, Billings Hospital
(3) University of Columbia Medical School, Presbyterian Hospital
(4) Evans Memorial Hospital, Boston, Mass.
(5) Harper Hospital, Detroit, Mich.
(6) Memorial Hospital, New York, N.Y.
(7) Montefiore Hospital, New York, N.Y.
(8) Massachusetts General Hospital, Boston, Mass.
(9) University of Rochester Medical School, Strong Memorial Hospital

(10) Vanderbilt University Medical School
(11) Washington University Medical School, St. Louis, Mo.
(12) Western Reserve University Medical School, Lakeside Hospital.

The Secretary of the Sub-Committee on Allocation was given authority by the Sub-Committee on Human Applications to allocate I 131 to the above approved institutions for the use of the persons at these institutions who are recognized for their experience with human applications of radioisotopes.

Pending the overall survey and the availability of extracted P 32, no action was taken on a list of approved institutions for P 32 clinical use. Institutions will probably not wish to change from the present cyclotron supply (which most are dependent upon), until there is some hope of obtaining a regular supply in a form which requires little processing by the institution.

No action was taken regarding other isotopes; allocation will be approved by the Sub-Committee on Human Applications by isotope and by institution as the demand arises.

Also on a temporary basis it was recommended that of the therapeutically used isotopes up to 20% of available material be reserved for tracer applications (if there is a demand for such). If over 20% of the available stock is being requested for tracer purposes, a policy decision will be obtained from the main committee.

5. Allocation of Available Materials by Intended Use.

a. Priority by Intended Use.

As a guide for allocation in case of conflicting demands for I 131, the priority for intended use was approved as follows:

First: A carcinoma that has been demonstrated to take up iodine.
Second: Grave's disease or exophthalmic goiter.
Third: Benign adenomata of the thyroid.

The following order of priority for intended use of P 32 was considered logical, but not formally approved:

First: Polycytemia Vera
Second: Chronic myelogenous leukemia
Third: Chronic lymphatic leukemia
Fourth: Others (except no allocation while P 32 scarce for surface beta ray irradiation, i.e., superficial lesions.)

After an institution has a local "isotope committee" and is regularly receiving material, the priority of use by the institution will be determined by this local committee.

b. Specific Uses for Certain Isotopes.

In addition to the highest priority uses listed in "a", the advisability of some other human applications of isotopes was discussed.

P 32. Allocation of P 32 for the treatment of superficial lesions was vetoed until production for this purpose would not reduce the supply of all isotopes for fundamental researches or for the higher priority clinical applications. This action was based on the successful treatment of such lesions with readily available X-ray equipment. Should a local beta ray application be shown to be more convenient or more suitable for the treatment of some lesions, the question was raised whether (1) lower specific activity (n,gamma) material could be used and (2) another more available beta emitter could be substituted for P 32.

C-14. The opinion was generally expressed that, even though the scarcity of C 14 is a major factor to be considered, the use of this material in a human being should not be sanctioned until its absorption and elimination properties is clearly demonstrated in animals. The very long half-life of the material makes caution desirable.

Au 199. The use of colloidal radiogold has been proposed for the treatment of leukemias and for tracer studies in arthritis. Here again a human application should be based on proper studies of this material in animals.

Sr 89, 90. Since this deposits to a great extent in the bones and has been shown readily to produce bone sarcomas in mice with a clinical picture like that of radium poisoning, much care should be exercised in the human use of this material. In particular, the Sr 90 (and Y 90 daughter) should not contributed in excess of 1% to the total rate of beta disintegration. Experience in the effects of long half-life beta emitters in animals and human is essential for the safe use of this material.

UX 1, UX 2. This naturally radioactive pair behaves chemically as UX 1, a thorium isotope (Th 234). Proposals have been made to extract the UX 1, UX 2 from uranium and investigate its possible therapeutic usefulness. Aside from the danger of bone damage, the material would have to be used with much caution because of likely kidney damage. No advantage could be seen in the use of radiothorium over the use of certain other beta ray emitting radioisotopes which deposit in bone. The Manhattan Project might be able to make the material available for investigations in animals provided there were a sufficient demand.

Co 60. As pointed out previously, this might be useful as a substitute for radium gamma ray sources, particular in therapeutically-used needles and packs. This use would not constitute an unique form of treatment. Radium and X-ray equipment are considered to be sufficiently available and satisfactory for those therapeutic uses in which Co 60 might be substituted. If radioisotope production capacity becomes sufficiently great, the use of Co 60 as a substitute for radium might be encouraged and become very important.

6. Mechanism for Handling Requests.

Two copies of each request for material for human application will go to each member of the sub-committee. One copy will be returned from each member to the Isotopes Branch with a "yes" or "no" vote on whether the institution and investigator should use the requested isotope in a human being. The other copy may be retained for possible future reference. If there is a "no" vote from any one member, the request will not be approved. A "yes" vote does not need to have any accompanying remarks, unless required as in cases of assigning a priority to a therapeutic application or to a clinical institution. A "yes" vote on a tracer request may be accompanied, at the option of the member, by an opinion on the proposed investigation and on the ability of the investigator. This will not be essential, however, since human tracer requests will generally classify under fundamental science and will be graded by the Allocation Sub-Committee.

A "no" vote should be accompanied by brief reasons for the "no". If the Isotopes Branch discovers only one "no" on a request and a possibly misunderstood reason for the "no", an attempt will be made to resolve the situation. In cases of more than one "no" vote, no further reference is necessary.

Requests concerning therapeutic and diagnostic applications will be handled as discussed in main Item 4 (parts "a" and "b"). Upon return from the sub-committee, the Isotopes Branch can act for the Allocation Sub-Committee in making an allocation. No referral to the Allocation Sub-Committee is necessary unless a conflict develops with needs for the same isotope in filling allocations for fundamental scientific investigations.

Requests for human tracer experiments, if not vetoed, will be referred to the Allocation Sub-Committee for priority rating. Such requests are the only ones requiring the action of both sub-committees.

In general, there is more of a need for speed in handling requests for human applications than for others because: (1) therapeutic action may be needed urgently, (2) the case may be an exceptionally good one for some purpose and may only be available for study immediately (for example, the chance to obtain tracer samples resulting from a special operation). Consequently, the action on these requests should be confined by each sub-committee member (both sub-committees in some cases) to only a few days, if possible. If not acted upon within a week, the member's secretary should be informed to return a copy of the request to the Isotopes Branch with a note that the member was unable to vote on the request. Action will then be taken upon the basis of the voting members.

SUMMARY:

1. All requests for material for human application must be passed upon by the Sub-Committee on Human Applications before allocation can be effected. This Sub-Committee will veto requests in case:

a. The requestors are not sufficiently qualified to guarantee a safe and trustworthy investigation.

b. Insufficient knowledge exists to permit a safe application of the material in the proposed human cases.

2. Requests for tracer experiments in human beings, which are not vetoed, will be referred to the Sub-Committee on Allocation to be given a priority rating in competition with other scientific investigations. Although only a "yes" or "no" vote is required on such requests by the members of the Sub-Committee on Human Applications, their remarks on the merits of the request will be welcomed.

3. Requests for therapeutic and diagnostic applications will be handled entirely by the Sub-Committee on Human Applications, without subsequent reference to the other sub-committee. The Isotopes Branch will coordinate the balancing of allocation for therapeutic and diagnostic purposes with that for other demands by referral of conflicts to the Allocation Sub-Committee or to the main Distribution Policy Committee.

4. Recommendations adopted by the Sub-Committee for the Allocation of isotopes for human use are, as follows:

a. The sub-committee will initially select a group of medical schools, hospitals, and clinics who may be eligible to receive radioactive isotopes (see appended list).

b. Each initially selected, or later requesting, hospital, medical school, and clinic should be invited to appoint a local committee composed of a chairman and whatever number of members they should see fit to pass upon all isotope requests originating from their institution.

c. All isotope requests from the institution would be initiated by the local chairman or his designated alternate.

d. The membership of the local committee should include at least (1) a physician well-versed in the physiology and pathology of the blood-forming organs, (2) a physician well-versed in metabolism and metabolic disorders, and (3) a competent biophysicist, radiologist, or radiation physiologist qualified in the techniques of radioisotopes.

5. No allocations of isotopes routinely used therapeutically and diagnostically (P 32, I 131, Na 24) will be made on the basis of a regular supply (number of mc per week or month) until:

a. Clinton Laboratories can establish its level of production (production methods are still under development; a routine operations staff is being accumulated; special circumstances may alter production; the Clinton pile and facilities are primarily for research and the isotope capacity is subject to the research program).

b. A survey is made of the institutions on the appended list concerning their qualification under 4 and their actual isotope demands. (Previous surveys were not complete and not based on economic and actual use factors.)

6. Pending the survey (5,b) allocations will only be made as material is available without commitment as to regularity of supply.

7. Each institution, qualified as in 4, will be passed upon for each isotope it desires to use. Once the institution is approved for the use of a certain isotope under the guidance of the local isotope committee, it can continue to receive available allotments of the isotopes for which approved, provided the local committee is maintained.

8. Allotments on a routine basis (when the desired materials become routinely available) will be apportioned by the Sub-Committee on Human Applications among the approved institutions. Up to a maximum amount per unit period (week, month, etc.) will be allocated to each approved institution. (The routine regular receipt of material under the allotment cannot be guaranteed, since special circumstances and the research program of the supplier, Clinton Laboratories, may alter production.)

9. In case the production level will not routinely supply the legitimate demands of all the approved institutions, a priority system will have to be set up by the Sub-Committee on Human Applications on the basis of the type and number of treatments undertaken and the facilities of the institution. First priority institutions may receive regular allotments. Second priority institutions may receive allotments when material is available above the first groups allocation.

10. Allotted radioisotopes are not to be distributed by the institution to secondary users outside the direct guidance of the local isotope committee (which under the Federal Food and Drug Administration Regulations covering "new drugs", will be the responsible, qualified group directing the use of the material). Approval may be obtained for a common allotment to or for transfer of materials between approved institutions.

11. Since the allotment of an isotope for therapy or diagnosis may not always be totally consumed for the alloted use, the local isotope committee may dispense safe amounts of unneeded material for investigations in other than human beings, provided the recipients are connected with the institution (or a cooperating institution) and are specifically named in the officially documented "Agreement for Order and Receipt of Radioactive Materials".

12. To expedite the handling of requests for therapeutic and diagnostic applications on a temporary basis, so that available isotopes will not be wasted and sudden demands can be fulfilled, the Isotopes Branch was given authority to allocate I 131 to a list of institutions approved by the sub-committee, provided the material was allotted for the use of the known radioisotope group at the institution. To resolve conflicts, a priority order was also provided for uses of the isotope. A similar arrangement can be made for P 32 when it becomes routinely available in extracted form.

Paul C. Aebersold

PAUL C. AEBERSOLD, Secretary,
Interim Advisory Committee on
Isotope Distribution Policy.
11 July 1946

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List of Institutions which may be Immediately Interested in and Qualified for Clinical Investigations with Induced Radioactive Isotopes.

(NOTE: This list may not be complete. Omission from it does not necessarily mean lack of qualifications for the use of radioisotopes. The listed institutions either are carrying on a program or have expressed a desire to initiate a program for the proper clinical use of radioisotopes.)

California Medical School, University of; San Francisco, California

California Radiation Laboratory, University of; Berkeley, California

Chicago Medical School, University of; Chicago, Illinois
Billings Hospital, Chicago

Children's Hospital, Boston, Massachusetts

Cleveland Clinic, Cleveland, Ohio

Columbia Medical School, University of; New York, N. Y.
Presbyterian Hospital, New York

Cornell Medical School, University of; New York, New York

Duke University School of Medicine, Durham, N. C.

Emory University Medical School, Atlanta, Georgia

Harper Hospital, Detroit, Michigan

Harvard University Medical School, Boston, Massachusetts

Illinois Medical School, University of; Chicago, Illinois

Iowa Medical College, University of; Iowa City, Iowa

Jefferson Medical College and Hospital, Philadelphia, Pennsylvania

Loyola University School of Medicine, Chicago, Illinois

Massachusetts General Hospital, Boston, Massachusetts

Massachusetts Memorial Hospitals, Boston, Massachusetts
Evans Memorial Hospital, Boston, Massachusetts

Mayo Clinic, Rochester, Minnesota

Memorial Hospital, New York, N. Y.

Michigan Medical School and Hospital, University of; Ann Arbor, Michigan

Minnesota Medical School, University of ; Minneapolis, Minnesota

Montefiore Hospital, New York, N. Y.

New England Deaconess Hospital, Boston, Massachusetts

Northwestern University Medical School, Chicago, Illinois

Ohio State University Medical School, Columbus, Ohio

Pennsylvania Medical School, University of; Philadelphia, Pennsylvania

Presbyterian Hospital, Philadelphia, Pennsylvania

Rochester Medical School, University of; Rochester, New York

Swedish Hospital, Seattle, Washington

Temple University Medical School, Philadelphia, Pennsylvania

Tennessee Medical School, University of; Memphis, Tennessee

Texas Medical School, University of; Galveston, Texas

Tulane University Medical School, New Orleans, Louisiana

Vanderbilt University Medical School, Nashville, Tennessee

Wake Forest College, Winston Salem, N. C.
Bowman Gray School of Medicine

Washington University Medical School, St. Louis, Missouri
Barnard Free Skin and Cancer Hospital
Barnes Hospital

Western Reserve University Medical School, Cleveland, Ohio
Lakeside Hospital

Yale University Medical School, New Haven, Connecticut

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