Ultraviolet Blood Irradiation

A History and Guide to Clinical Application (1933 - 1997)

Authored by:

with
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For:

The Foundation for Blood Irradiation, Inc.
1315 Apple Avenue
Silver Spring, Maryland
DEDICATION

This book is dedicated to those persons who pioneered the development and introduction of Ultraviolet Blood Irradiation. These persons diligently worked to bring forth this process, some at risk to their own reputations.

We especially wish to note the achievements of Emmitt Knott, Louis Ripley, John Winters, and Dr. H.T. Lewis.

We also dedicate this book to the staff of the Foundation for Blood Irradiation who carried out a comprehensive and challenging task to dig out records and material, some of it over 60 years old. If this were not done, then this technology may have been lost to mankind.
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FOREWORD
(1966 EDITION)

At the present writing, most sources state that very little is known about the effects of ultraviolet energy in vivo. To the contrary, much is known by those of us who have had long experience with intravenous ultraviolet, which we call Ultraviolet Blood Irradiation, or simply UBI.

Indeed, it is our belief that with UBI therapy a great advance has already been made into what Erf described as the "Seventh Phase" of medicine. Chronologically, Erf named the Phases as Anatomical, Cellular, Pathological, Bacteriological, Physiological, Biochemical, and now, the Seventh Phase, Intravenous Radiant Energy.

It is not our purpose in this book to deal with the vast and complex subject of sunlight, various essentials of which to both plant and animal life have been recognized since the dawn of reason in man. Rather, we are dealing with only its ultraviolet component; not with the physical properties and action of UV in vitro which are well-established, but rather with the biochemical and physiological effects of ultraviolet, the "energy factor" of sunlight, in vivo.

Physicians who employ UBI in their practices consider this therapy to be one of the greatest discoveries in medical history.

UBI therapy is, in effect, the electronic application of UV energy to about 5 per cent of the patient's blood. On its return to the vein, the small quantity of irradiated blood exerts an action on the total blood in accordance with the laws of spectral energy.

The first treatment of a human with UBI occurred in 1928, the successful healing of a woman patient who was apparently moribund from septic abortion, complicated by hemolytic streptococcus septicemia. She subsequently bore two children.

In the intervening years, well over half a million UBI treatments have been given to perhaps 30,000 different patients by as many as 300 physicians in a wide variety of diseases, without damage or side-effects to a single patient.

Over 60 scientific and clinical papers on UBI have been reported in medical journals and before medical groups. This work could not be duplicated for several millions of dollars. Probably not one medical development in a hundred has had such extensive research and clinical evaluation in advance of general recognition as UBI.

The hemoirradiator equipment was first presented in the Scientific Exhibit of the American
FOREWORD
(1997 EDITION)

The publication of this book has been years in the making, with many hours of fine
detective work spent in finding some of the missing chapters long considered lost. The
Foundation for Blood Irradiation (FFBI), its well-wishers, supporters and staff view this
accomplishment as a coming of age and renaissance for Ultraviolet Blood Irradiation (UBI).
Those who participated in this effort can be justifiably pleased.

The writing of this manual began in the 1930’s with the pioneers of this technique,
specifically, Olney, Miley, Knott and Lewis. They treated thousands of patients with a
broad spectrum of disease complaints, and closely observed these patients, often over a
period of years. Because of their dedication and vision, we now have concrete
documentation on the efficacy and safety of UBI. Their efforts have filled the pages of this
manual and make a profound argument for UBI to become one of the more effective
treatment methods of our time.

Writing was completed in 1997 with the addition of Chapter 23, which documents recent
research into the treatment of HIV/AIDS using UBI. This Chapter replaces the original
Chapter 23, which dealt with diseases of connective tissue, and regrettably was lost over
the many years since work began on this project.

UBI was originally created through the research of E.K. Knott to fight the ravages of
poliomyelitis in the 1930’s, which it did with considerable success. However with the
advent of antibiotics and the Salk vaccine this method of treatment fell into disuse during
the 1950’s and 1960’s, and was for a long period of time overlooked by most physicians.
Those who had not been totally seduced by the use of antibiotics continued to apply UBI
and were soon rewarded with the knowledge that UBI could successfully treat many other
ailments than polio, as well as those diseases not responding to antibiotic treatment. As
news of this discovery spread, UBI found a renaissance in the 1980’s and has been re-
introduced by FFBI in the 90’s, with an improved, state-of-the-art device. Because of UBI’s
widespread use prior to May 28, 1976, the FDA cut-off date for pre-Amendment status of
the 1980 medical device law, the FDA in a letter to FFBI of July 21, 1994 granted pre-
amendment status to UBI. This is also known as the "Grandfather Clause" exemption.
This is the only device accorded this status.

The Foundation for Blood Irradiation (FFBI), an organization founded in New York in 1947
by Louis Ripley, John Winters, Dr. H.T. Lewis and others, moved to Maryland in 1979 and
continues in operation today under the direction of Dr. Carl Schleicher. Recently FFBI has
obtained reports of the use of UBI in the treatment of HIV/AIDS; projects are currently in
process for treating immune system disorders, Alzheimer’s Disease and Gulf War
The Knott Hemoiradiator (1997)

This is the newest generation of the Knott Hemoiradiator, which went into production in 1997 through the efforts of the Foundation for Blood Irradiation. To comply with FDA clearance, only state-of-the-art and cosmetic changes have been made over the original model produced 50 years ago.

The photograph shown may not represent the latest release. Licensed manufacturer for the Knott Hemoiradiator is Precision Assembly Corp., 185 Ridgedale Ave., Cedar Knolls, NJ 07927; (201) 267-7117 or FAX (201) 538-5421.
A. APPLICATION OF ULTRAVIOLET ENERGY

The application to physical medicine of ultraviolet energy is not new, but has been used for many years as a valuable therapeutic tool. During these years, Ultraviolet Blood Irradiation (UBI) practitioners have learned much about the various physiological effects of UBI. Among the more important physiological fundamentals may be listed the following:

1. The **bactericidal properties** of UBI have long been recognized due to much excellent pioneer work by Downes and Blount (1), Ward (2), and more recently, by Coblentz (3), Bayne-Jones (4), Wyckoff (5), Bachem (6), and others.

2. The **detoxification effect** of UBI is not generally recognized by the medical profession and certainly has not been emphasized enough when one considers the fine work of Jodlbauer and von Tappeiner (7), and Noguchi (8), early in the century, and of Macht (9), Schubert (10), and Welch (11), in their studies on detoxification with UBI. Certainly the inactivation of snake venoms and bacterial toxins are examples of what may be accomplished by UBI.

3. **Vasodilation** is commonly observed wherever UBI is used. Studies on this mechanism have been reported by Balderrey and Barkus (12), T. Lewis (13), Krogh (14), Ellinger (15), and Kawaguchi (16).

4. **Photosensitization and Photodynamic Effects** must be mentioned because of the many photosensitive chemotherapeutic agents so widely used today. The early work of von Tappeiner and Jodlbauer (17-18), laid the foundation for work by Epstein (19), Blum (20) and many others.
The comprehensive books of Ellis, Wells and Heyroth (37) and of Duggar (36) are filled with information, including the points raised above. In studying the biochemical, physical and physiological effects of ultraviolet energy, one central point is apparent: that the physics of ultraviolet energy and its relation to elemental photochemistry is of extreme importance.

B. ESSENTIALS OF THE PHYSICS AND CHEMISTRY OF UV ENERGY

In order for one to understand the type of agent utilized in UBI, it is essential to know something of the physical properties of ultraviolet energy and to realize that ultraviolet is a very powerful energy which must be used only under carefully controlled conditions.

In considering any type of spectral energy, several fundamental criteria must be emphasized. These are briefly: a) The classification of the energy, according to the quanta emission where possible; b) Certain laws of action; c) Relationship in chemical reactions; d) Possible sources of emission of the energy; and e) The necessity of the energy.

The standard classification of the various types of radiant energy according to wave length has given us: Gamma Rays, X-rays, Ultraviolet, Visible Light, Infrared, Microwaves, Radio Waves. Radio Waves are considered the longest of waves and Gamma Rays the shortest in length.

The sources of the neutron beam, alpha particles, and X-rays are usually the cyclotron, radium, and the X-ray tube (respectively), whereas the common sources of ultraviolet energy are the sun (solar energy), the carbon arc, and the mercury arc. In modern UBI therapy, a mercury quartz lamp is utilized.

The intensity of radiant energy is measured in various ways according to the type of energy measured. The mercury quartz lamp used in UBI therapy is standardized to a known intensity as follows:

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<th>Angstrom Units (Wavelengths)</th>
<th>Milliwatts/CM² (Intensities)</th>
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<tr>
<td>2399</td>
<td>55,000</td>
</tr>
<tr>
<td>2483</td>
<td>88,000</td>
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<td>239,000</td>
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to UV light as it moves across the cuvette. The UV light is kept at a very constant intensity. All of these factors, i.e. the amount of blood, time of exposure, and intensity of light were all worked out through similar trial-and-error as above, and also have become very standardized.

We have often been asked why we do not irradiate more blood, or why we do not expose the blood to UV for longer durations. The obvious answer is that this would produce an incorrect photochemical reaction, analogous to (yet far more serious than) producing an over-exposed print. Overexposure of blood can be dangerous to the patient and have little or no effect on the disease process being treated. On the other hand, the standardized optimum dosage produces a desirable photochemical reaction and thus the desired clinical result.

Several of the fundamental laws governing the mechanism of photochemical reaction are as follows:

1. **Grotthus-Draper Law**, also known as the first law of photochemistry, states that only light that is absorbed can act chemically.

2. **Bunsen-Roscoe Law** states that a photochemical change is proportional to the intensity and duration of illumination (exposure to light).

3. **Stoke's Law** states that the wavelengths of secondarily emitted rays are greater than the wavelengths of the primary exciting rays.

4. **Einstein's Law of Photochemical Equivalence** states that each absorbed quantum should cause one light absorbing molecule to react photochemically.

5. Also, according to Nernst, **chain reactions** are produced by continued secondary emanations.

Thus we readily see that the mechanism underlying the complex photochemical procedure of UBI must conform to certain known laws. Although this exact mechanism may not be understood currently, the photochemical reaction itself is a desired effect which can be utilized practically and predictably to obtain favorable clinical results.

As a corollary of the above, it is obvious that UV energy may be used as a source of varying energy. Generally we may assume that in excessive amounts, UV may be harmful to living beings; in optimum amounts it is of great practical value; and in inadequate amounts may have little or no effect.

Based on years of experience by many physicians utilizing UBI, it is believed that the Knott Method of UBI introduces an optimum amount of UV energy *in vivo*. Clinical results have
at pH 8.0. Lower pH values tend to make glutathione more resistant to photo-oxidation. It should be noted that the sulfur system has been affected by the ten-second irradiation in both the glutathione and the cysteine experiments since the Okuda reaction used in both estimations indicates the amount of -SH groups present.

6. Ergosterol was irradiated in petroleum ether and in chloroform. The characteristic peaks in the absorption spectrum of ergosterol were either markedly diminished or eliminated in the ten-second irradiation, proving the destruction of ergosterol. A 6-1/2, 9, and 19 second irradiation of ergosterol solutions gave definite proof of the formation of Vitamin D. There was very little or no Vitamin D in the non-irradiated solutions of ergosterol.

7. The ten-second irradiation increased the phagocytic index of rabbit blood from 38 to 78 percent. An increased phagocytosis would undoubtedly help in body defense.

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1 Glutathione is found in red blood cells to the extent of an average of 34 mg. per hundred ml. of blood, according to Woodward and Fry.

Of glutathione, Best and Taylor indicate that "it is almost universally distributed in the intracellular fluids of animal tissues, as well as in plants, yeasts, and many bacteria. Of all the known cellular compounds containing the sulphhydril group, apart from the proteins, glutathione is probably the most widely-distributed in living cells, in view of the fact that oxidizing agents in the cell tend to inhibit the activity of -SH enzymes. Its reducing action has been demonstrated in many experiments. Glutathione, therefore, appears to influence cellular oxidations in an indirect rather than a direct manner."
ULTRAVIOLET BLOOD IRRADIATION (UBI) THERAPY

A. History of Early Efforts to Introduce UV Energy into the Blood Stream
B. Intravenous Ultraviolet (Knott Technique of UBI)
C. Early Publications on Effect of Knott Method
D. Early Scientific Exhibits
E. Early Papers Given at Various Medical Conventions

A. HISTORY OF EARLY EFFORTS TO INTRODUCE UV ENERGY INTO THE BLOOD STREAM

As some of the beneficial aspects of external UV exposure became apparent to medicine, it became equally apparent that these results were not constant in all individuals. This is logical since any therapeutic agent introduced through dermal absorption is never as efficient as direct intravenous introduction of the same. Variations in skin structure, capillary distribution and course make absorption through the skin unpredictable and, in some cases, absent.

Many devices were originally tried for UV irradiation of the blood. These included:

1. Quartz tubes with blood running through them exposed to UV, either from the patient’s own blood stream, directly from another donor, or indirect transfusion of blood. It was soon found that blood running through this tube rapidly formed a film on the quartz which was opaque to UV and allowed no penetration at all of the rays.

2. Blood also was exposed to UV in open containers and re-injected after exposure times varying from 15 minutes to 48 hours. This produced a variety of effects, mostly those due to the introduction into the general circulation of foreign proteins and other breakdown products of blood produced by relatively long exposure to UV. A type of fever therapy, poorly controlled, was effected by these attempts.

3. The most successful early method, and that used most frequently before the advent of the Knott Method, was known as the Havlicek method. This was the subject of a number of reports by Braun, a surgeon in Germany in the early 1930's. In this method, a quantity
One day, accidentally, one dog only received exposure of approximately 5% of his total blood volume to the UV irradiation; this dog survived with no further evidence of its original disease or any deleterious effects from the exposure of its blood to UV. Knott felt that the dog's life was saved from the disease process, an artificially induced streptococcus septicemia. Whether or not this occurred, the main benefit of this accident was that Knott learned to administer UBI in safe amounts, as opposed to the lethal effects evidenced by his previous overdoses to dogs.

Thus it was with this revised method of treatment that Knott successfully treated the first two human cases, as mentioned above. By this time, Knott was convinced that he was on the right track, as was Dr. Hancock of Seattle, Washington, physician in charge of the second patient treated. Until his death in the late 1950's, Hancock continued to use the Knott Technique of UBI with outstanding success. He contributed much of the early data on this subject, and helped to found the American Blood Irradiation Society.

Through 1936 and 1937, Knott succeeded in convincing Dr. E.W. Rebbeck to start a UBI program at Pittsburgh's Shadyside Hospital, as well as helping Drs. G.P. Miley and H.M. Eberhard to establish a UBI clinic at the Hahnemann Medical College Hospital of Philadelphia, with Dr. Miley as Director. Concurrently, Dr. Henry Barrett began his work with UBI in New York; he soon published preliminary papers describing his treatment successes.

The clinic at Hahnemann Hospital in Philadelphia continued to operate until 1948, and it was during this period that UBI was used in a vast variety of disease processes. From this experience an enormous amount of information was obtained, and much of it is presented in this book. The principles learned there are fundamental, and regardless of medical moods, or state-of-the-art changes to the UBI device, these principles endure. Many of the important discoveries of this period have been buried beneath the changing mood and fashion of the medical establishment, but are presented here for the benefit of all physicians.

The writings of Rebbeck, Barrett, Hancock and Miley interested many others, who began their own work with UBI in the 1940's and published numerous articles supporting the claims made by these pioneers of UBI therapy. Chief among this "second generation" of UBI proponents were Wasson, Olney, Dowd, Barger, Schmitt, Erf, LaPlume, Lewis, von Pohle, Anderson, Hartwell, Schulz, Weinmann, and others, whose research also contributes to this present work.

Despite the overwhelming evidence to support the broad efficacy of UBI, no general acceptance of this tremendous discovery was forthcoming by the medical profession. This may be explained in part by the swelling tide of promotion and interest in the chemo- and antibiotic therapies which were in the experimental and developmental stages when UBI was proving itself clinically. Surely resistance within the political arena of medicine was
his opinion a definitely favorable influence on the course and symptoms of this disease was observed. In 1947 he reported in discussion form these cases (22) plus three cases of acute encephalitis; in these latter cases recovery was rapid and dramatic.

In 1945 (16) Seidel and Christensen, with Miley, published (after 6 years' study) further statistics on the use of the method in 160 cases of bronchial asthma, confirming their original belief in the value of UBI in this disease entity as a supportive nonspecific type of therapy.

In 1946 Miley (17) reported the recovery of a patient from almost terminal botulism, demonstrated incidentally that the Knott Technique not only produced a tremendous detoxification effect but also that the botulism toxin was not so fixed a toxin as originally believed.

In 1946 Olney (18) reported that biliary tract infections both acute and chronic appeared to be efficiently controlled by the use of UBI. In 1947 he published observations on a series of over 600 cases of pelvic cellulitis (19), stating that in his opinion, UBI obviated surgery in about 70% of the cases in which it ordinarily would be indicated.

In 1947 Miley (20) published a report on acute infections, including 454 consecutive cases of acute pyogenic infections and 74 cases of acute virus or virus-like infections. In this paper all original observations were confirmed, including Rebbeck's preoperative effect; in addition the author claimed for the first time that many virus and virus-like infections were rapidly and efficiently controlled by the use of the Knott Technique. In a later 1947 paper (21) devoted exclusively to the use of the method in acute virus and virus-like infections, Miley claimed the same effect and was supported, independently, by Barger and by Eberhard, who mentioned for the first time that he had observed the method to influence brucellosis infections rapidly and favorably, especially those in the early stages.

In 1947 Sullivan and Beroza (22) in collaboration with Barger found that the opsonic index was raised and that the essential amino acids, solutions of adrenaline, dihydroxyphenylalanine, cysteine hydrochloride, glutathione and ergosterol were definitely altered after in vitro exposure to UV in the Knott Technique.

In 1947 Wasson, Miley and Dunning (23) began a preliminary investigation lasting 18 months; they discovered that in 67 consecutive cases of acute and subacute rheumatic fever in children, the acute episodes of rheumatic fever had been brought rapidly under control and that all rheumatic activity had disappeared with an obvious and striking gain in cardiac reserve in those children in whom it was initially low.

In 1955 Olney (24) reported on the treatment of viral hepatitis with the Knott Technique; and again in 1959 he reported (25) on treating resistant staphylococcus and infectious and serum hepatitis.
Tenth Annual Post Graduate Assembly, College of Medical Evangelists. December 5, 1943, Los Angeles, G.P. Miley.


American Congress of Physical Therapy (Western Section). May 1944, Detroit, MI, G.P. Barger.

Los Angeles County Medical Society, discussed by G.P. Miley. December 2, 1944, Los Angeles, Max Anderson.
3

BIOCHEMICAL AND PHYSIOLOGICAL EVENTS KNOWN TO OCCUR FOLLOWING ULTRAVIOLET BLOOD IRRADIATION

A. A Rapid Subsidence in Toxic Symptoms Due to Severe Infections
B. A Marked and Rapid Increase in Resistance to Many Bacterial Infections and to Most Infections Due to Viruses (or Infections of a Virus-like Nature)
C. Grossly Discernible Peripheral Vasodilation
D. Regulatory or Normalizing Effect on the Autonomic Nervous System
E. Effect on Oxygen Exchange
F. Absence of Deleterious Effects
G. Adverse Reactions
H. Hematological Effects
I. Opsonic Index and Miscellaneous Fragmentary Findings
J. Vaccine Effect
K. Corollary

From the beginning all workers in the field of UBI have monitored their patients carefully for appearance of some of the known biochemical and physiological effects of intravenous UV. They have been rewarded by seeing various of these effects occur with almost infallible regularity following the correct application of UBI.

A. A RAPID SUBSIDENCE IN TOXIC SYMPTOMS DUE TO SEVERE INFECTIONS

1. **Nausea and Vomiting** disappear usually within a few hours.

2. **Fever** drops to about 99-100 degrees but may be elevated temporarily, in the first 24 hours, and in 48-72 hours it is generally normal. Failure to drop to normal in 48-72 hours indicates, in acute pyogenic infections, usually the presence of septicemia if toxic symptoms are also present. Failure of fever to disappear in 48-72 hours, but its
C. GROSSLY DISCERNIBLE PERIPHERAL VASODILATION

This can be easily observed in approximately 75% of individuals whose skin coloration is not pinkish or tan to begin with. As a rule, the appearance of peripheral vasodilation is a favorable prognostic sign and as such may usually be regarded as evidence of the presence of a disease process which is definitely UBI-sensitive.

D. REGULATORY OR NORMALIZING EFFECT ON THE AUTONOMIC NERVOUS SYSTEM

This effect has been observed by almost all practitioners of UBI. This may be the only explanation for the unusually rapid disappearance of pain and edema plus a return to normal limb sensation and temperature in acute lymphadenitis and lymphangitis; for the return to normal gastrointestinal tone in advanced paralytic ileus; for the appearance of peripheral vasodilation; and for the marked relief of bronchospasm noted in individuals given UBI for bronchial asthma of the most advance type.

In each of the disease processes mentioned, one of the outstanding characteristics involved is a poorly-balanced autonomic nervous system. In acute thrombophlebitis, that part of the autonomic system supplying a lower extremity is most commonly in a state of unbalance. In paralytic ileus, it is that part supplying the affected portion of the gastrointestinal tract which is involved; and in bronchial asthma of long standing, it is that branch which supplies the bronchial and bronchial musculature.

Consequently the consistent return to normal from a state of serious imbalance of each of these branches of the autonomic nervous system must be considered *prima facie* evidence of a profound effect exerted upon the autonomic system by the irradiation of blood with UV by means of the Knott Technique of UBI.

The means by which this effect on the autonomic nervous system is accomplished is unknown. We do know that it does occur following UBI, that the effect is normalizing or regularizing and that it can be depended upon to restore to normal parts of the autonomic nervous system which are badly out of balance, in certain types of disease processes.

E. EFFECT ON OXYGEN EXCHANGE

Several interesting findings are as follows:

1. **Increase in venous oxygen**, Miley observed in 1939 (1) that in individuals with initially low venous oxygen content, there occurred following UBI a striking rise in the oxygen
F. ABSENCE OF DELETERIOUS EFFECTS

The complete absence of deleterious effects, either immediate or delayed, when UBI is used properly, has allowed clinical investigators to use this procedure over a period of time varying from one to twenty years and more on a single patient. This can be done with relative impunity and a greatly appreciated freedom from fear of doing damage to the individual patients.

G. ADVERSE REACTIONS

1. **Citrate reactions.** In over ten thousand applications of this therapy given by Miley, he has noted only six adverse reactions due to the procedure itself, all typical citrate reactions, accompanied by headache, chill, temporary (2-12) fever of not more than 102.0 degrees F., and moderate gastrocnemius spasm. This is less than 0.1%, an incidence much lower than that encountered in intravenous procedures in general. For all practical purposes this infrequent type of reaction can be disregarded.

2. **Photosensitization reactions.** In view of the fact that photosensitive drugs and light combined may produce characteristically a rapid increase in tissue permeability, especially in the large viscera, there may be an appearance clinically of pulmonary, cerebral, or subcutaneous edema, ascites and even edema of the kidneys. It was originally considered unsafe to use UBI where such photosensitive drugs, notably sulfanilamide and iodides, were being used or were intended to be used. However, it has been found by the authors and others that UBI, after sulfadiazine had been discontinued, was a safe procedure, since many apparently moribund individuals receiving sulfonamide therapy recovered, although concurrently receiving UBI treatments at a time when any deleterious effects at all would have been sufficient to produce death, had there been any such effects.

On the other hand, Miley discovered inadvertently that the use of photosensitive drugs following UBI was extremely dangerous and most unpredictable at all times. This experience was gained the hard way by physicians ignorant of the very existence of photosensitization, administering such drugs despite repeated warnings by the consulted hemoradiologist. However, we learned that sulfonamide drugs given following UBI would cause a rapid increase in toxic symptoms and as a result, the final effect upon dangerously ill patients was too often a foregone conclusion, i.e., exitus.

It was found that sulfonamide drugs could be safely given before UBI but had to be discontinued for at least four to seven days once the latter was started. Iodides were found to be extremely dangerous at all times especially intravenously. It was Miley's impression that digitalis cannot be given for four to seven days safely after UBI in some individuals;
unit is theoretically possible and may be of significance.

**H. HEMATOLOGICAL EFFECTS**

1. **Erythrocytes.** No effect is observed on normal erythrocyte count nor on the normal erythrocyte structure following UBI.

If the erythrocyte count is low and cellular structure relatively normal (as in a secondary anemia), there occurs frequently but by no means always a rapid return to normal of the total number of erythrocytes. On December 7, 1944 at a medical meeting\(^1\), Jones and Erf stated that they had failed to observe any rise in red count in primary or secondary anemia. In our series we noted that in primary anemia there may occur a slight change in structure toward normal, but our chief finding is clinical, namely the disappearance of toxic effects insofar as can be judged clinically by cessation of progressive spinal cord changes and a marked increase in muscle strength generally, in cases refractory to liver therapy (which however must also be continued despite a favorable response to UBI).

In polycythemia vera, no favorable changes have been observed except in one instance and then in conjunction with the use of radioactive phosphorus\(^2\).

2. **Leukocytes.** No effect is observed on a normal leucocyte count nor on the structure of normal leukocytes following UBI.

If leukopenia exists due to overwhelming infection, the white count rises rapidly following UBI; e.g. in fulminating lobar pneumonia a count of 8,000 (60% polys), rose to 38,000 (87% polys), the first 24 hours following UBI and slowly fell to normal as the clinical symptoms disappeared.

If a leucocytosis is present initially the white count falls as the patient improves clinically, the poly percentage also returning to normal.

3. **Hemoglobin value.** The Hb value is affected in almost direct proportion to the erythrocyte count.

4. **Sedimentation rate.** Normal sedimentation rates are not affected by UBI. High sedimentation rates due to acute pyogenic infections fall rapidly as the disease process

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\(^1\) Am. Coll. Physicians, Post Graduate Meeting, Philadelphia, Dec. 6-7 1944.

\(^2\) Erf and Barrett stated in 1943 that one of the most rapid and remarkable recoveries from polycythemia vera occurred when a patient who failed to respond to UBI for treatment of polycythemia vera was given radioactive phosphorus by the former.
delayed or non-union of fractures.

8. **Blood lipids.** Rebbeck has reported that following UBI there occurs characteristic changes in the microscopic appearance of the chylomicron or emulsified fat particles present in the blood. In initially normal pictures no changes occur following UBI. In patients with profound toxemia secondary to bacterial infections, the microscopic blood fat picture prior to UBI shows marked clumping of the chylomicron plus an absence of normal Brownian Movement (to and fro motion of fat particles); following UBI (both in vitro and *in vivo*) the clumping disappears and both chylomicron arrangement and Brownian Movement returns to normal. It is interesting to note that in order to get a return to normal in toxemia, blood must be irradiated twice as long *in vitro* (i.e., blood is examined immediately after passage through irradiation chamber or cuvette), as is the case when the blood from such a toxic patient is examined following blood irradiation.

9. **Blood sludge.** Preliminary observations following UBI in 32 patients at the Olney Clinic in 1948 revealed, according to Dr. E. H. Bloch:

(a) A decrease in the rigidity of the basic masses.
(b) A light increase in blood flow.
(c) A decrease of charge aggregates.
(d) No other immediate marked changes in the character of the masses. Actually, this means better nutrition of the veins, with less plasma lost.

I. **OPSONIC INDEX AND MISCELLANEOUS FRAGMENTARY FINDINGS**

Knott and Sweet\(^1\) in 1936 observed a definite and marked increase in the opsonic index of dogs to whom UBI had been applied.

A rise in the opsonic index in humans was observed by Sullivan-Beroza\(^1\). Knott and Sweet\(^1\) also observed that following the irradiation of whole citrate blood, that the serum of such blood would fog an ultraviolet-sensitive film, but that the cellular elements and whole blood would not.

The Monroes\(^1\) observed in two patients a marked change from normal of the tiselius curve, with a great positive increase in the amplitude of the beta globulin curve, following *in vitro* UBI.

\(^1\) From personal communications.
with chronic herpes zoster has been markedly relieved of symptoms while the other has not been heard of since his original UBI.

"The production of a vaccine effect seems to us to have occurred in the cases of chronic furunculosis mentioned. Whether or not this has occurred in the cases of herpes zoster mentioned seems problematic but worthy of mention."

K. COROLLARY

A correlation of those physiological events observed following the use of UBI with the known biochemical and physiological effects of ultraviolet energy in general, reveal that many striking similarities exist. This can be readily seen from the above description of the former, e.g. the subsidence of toxic symptoms due to bacterial infections is what might be expected when one considers the rapid inactivation of bacterial toxins by ultraviolet rays. Similarly, the efficient control of various bacterial infections parallels the known bactericidal action of ultraviolet.

What is especially significant is that apparently so little ultraviolet energy is required to produce these effects following UBI in vivo as compared to the amount necessary in vitro.

The corollary to this fundamental observation is that UBI supplies either a previously missing "energy" factor or acts as a catalytic agent initiating or speeding up biochemical reactions which otherwise would not occur or would take place too slowly to have any appreciable clinical effects. A combination of both of these possibilities must also be considered.
VIRUS AND VIRUS-LIKE DISEASES

A. Atypical Pneumonia
B. Poliomyelitis and Polioencephalitis
C. Encephalitis
D. Hepatitis: Infectious, Serum
E. Influenza
F. Common Upper Respiratory Disease
G. Herpes Simplex
H. Herpes Zoster
I. Mumps
J. Mononucleosis
K. Measles

In 1953, the American Blood Irradiation Society (1) published a favorable opinion of the use of UBI to control virus and virus-like diseases. The opinion was based on thousands of clinical cases treated with this therapy, many of which were reported in published papers, and presented before official medical groups. Since 1953, much additional clinical data has been reported. The diseases treated successfully with UBI are discussed in a chronological pattern and include those listed above1.

A. ATYPICAL PNEUMONIA

The first report on the use of UBI in virus or virus-like infections was made in 1943 by Miley (2) in which he described a rapid recovery following UBI of eight individuals with atypical pneumonia of a virus or virus-like character. X-ray evidence showed clearing of the pulmonary fields of the characteristic pattern of atypical pneumonia in 24 to 72 hours

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1 Editor's Note: AIDS/HIV was not present at the time that this chapter was originally written (circa 1963) and thus is not included here, in order to preserve the original chapter structure. However, data on recent successful treatment of AIDS/HIV is presented in a later chapter.
efficacy of UBI therapy. Approximately 35 patients were treated, with approximately 90% of the virus cases being patients at Charity Hospital in New Orleans. The number of patients treated was not large, the preference being to study cases closely and study the effects of the therapy in a small controlled group.

A favorable report was made by Hartwell to the AMA Council; however, a prior understanding did not permit general release unless the AMA so recommended. For reasons unknown, the AMA made no such recommendation and gave no reasons for withholding it. Excerpts from this report appear on a later page in the section.

EXCERPTS FROM MILEY (5) ON ACUTE POLIOMYELITIS AND POLIOENCEPHALITIS

The first studies of the effects of UBI in 58 consecutive cases in an epidemic of acute poliomyelitis were made in Los Angeles\(^1\) by the author in the fall of 1943 during which time he was extended privileges of the Contagious Disease Section of the Los Angeles County General Hospital at the request of Dr. Wayne McFarland\(^2\) of the Department of Physical Medicine of the College of Medical Evangelists, and with the invaluable aid of Dr. Evelyn Knouf, Chief Resident of the Contagious Disease Section. The following is quoted from the original report of this work:

**CLINICAL OBSERVATIONS:**

1. The Knott technique of UBI, which is a general systemic type of therapy designed to raise the patient's resistance against infectious agents and their toxins, does not interfere in any way with the Kenny treatment when used in conjunction with the latter in the treatment of poliomyelitis in the acute stage.

2. The Kenny treatment, in turn, does not interfere in any way with the Knott technique of UBI.

3. Of the 58 consecutive unselected cases of acute poliomyelitis in which the Knott technique was used in addition to the Kenny treatment, 11 were of the bulbospinal type. In 7 of these, the disease was of a severe, fulminating nature, and one death occurred; in 4 cases it was of a mild non-toxic type. The remaining 47 cases were of the spinal type. In 6 of these there were both severe toxic symptoms and an apparent progression of muscle

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\(^1\) Aided by grants from Hanhemann Medical College and Hospital of Philadelphia; and by the Los Angeles Chapter of the National Foundation for Infantile Paralysis.

\(^2\) Dr. McFarland pioneered the Kenny treatment in the USA and the Billig-Van Haarevelt muscle re-insertion method in poliomyelitis, as well as UBI.
SUMMARY:

A detailed report has been given of the results after use of UBI in addition to the Kenny treatment in 58 cases of acute poliomyelitis; during that part of the 1943 Los Angeles epidemic which occurred between October 18th and December 6th.

The UBI therapy was attended by no harmful effects in this series of cases. No contraindications to the combined use of UBI and the Kenny treatment has appeared. On the contrary, a supplementary relationship has been apparent in the cases studied to date.

A complete subsidence of toxic symptoms occurred consistently within 24 to 48 hours after UBI. Again we wish to emphasize the recognition of the period in the natural evolution of poliomyelitis during which a rapid subsidence of toxic symptoms may be expected, but the fact that such changes occurred routinely with 24 to 48 hours after UBI suggests that this phase of poliomyelitis may have been influenced by this type of therapy.

EXCERPTS FROM BURKE, LAVERNE AND BARGER (6) ON ACUTE POLIOMYELITIS

UBI was used in 11 cases of bulbospinal polio and 5 cases of spinal polio at Children's Hospital, Washington, D.C. At the same time, no UBI was used in 14 cases of bulbospinal polio, i.e., control group. This work was done between July 11, 1944 and October 31, 1944.

CONCLUSION:

1. 11 patients with acute, severe bulbospinal poliomyelitis received UBI. One death occurred and the other 10 patients recovered completely (91% recovered and 9% died).

2. In the control group of 15 cases of acute, severe bulbospinal poliomyelitis, there were 5 deaths (64.3% recovered, 35.7% died).

3. The death rate was almost 4 to 1 in the control group as compared to the group treated with UBI.

4. The use of UBI in bulbospinal poliomyelitis offers more than any other therapy.

5. In the 5 patients with spinal poliomyelitis there was no further progression
C. ENCEPHALITIS

The best way to state an opinion about the value of UBI in encephalitis, regardless of type, is to point out that never has encephalitis ever developed in a patient treated with UBI for infections, whether the infections were bacterial or viral in nature. This eliminates the development of post-infectious encephalitis, as many thousand of UBI's have been given to patients with a wide variety of bacterial and viral infections.

In 1951 Hartwell (7) reported on 2 cases of encephalitis successfully treated with UBI, to the AMA council of Physical Medicine and Pharmacology.

Case No. 1 was that of a 9-year-old white female who entered the hospital on 3/5/50 in coma with involuntary irregular movements of the extremities. The patient was irritable to touch and in pain, but no other responses were elicited. There was a bilateral positive Babinski and nuchal rigidity. The normal reflexes were diminished or absent. The spinal fluid was clear; the cell count was 10 with 30% polys., 70% lymphs.; the protein was 19 mg percent, sugar 81 mg percent; the blood culture was negative; the spinal culture was negative; the WAC was 20,200 with 66% neutro., 1% eosin., 28% lymphs., and 5% mono. On admission the patient was placed on penicillin, Chloromycetin, sodium sulfadiazine, a diluted lactate Ringer's solution; aureomycin was started 15 hours after admission. Twenty hours after admission, because of continued temperature elevation from 99.8 degrees to 103 degrees, the patient was given an autotransfusion of irradiated blood. The temperature remained approximately 102 degrees for 24 hours, then fell to 99.4 degrees 36 hours following UBI. At that time the patient became rational to the point of responding to questions and recognized her parents. An attempt at UBI 48 hours after the first UBI failed because of inability to satisfactorily enter a vein. However, 24 hours later (72 hours after irradiation) the temperature having risen to 100.8 degrees, UBI was successfully administered. Within 12 hours the temperature fell to 99 degrees. The patient became completely rational and required no further therapy. The temperature during the next 4 days varied between 98.4 and 99.4 degrees. The pathological reflexes disappeared and the normal reflexes returned. Two days after the second UBI the WBC was 8,200 with 74% neutro., 24% lymphs. and 2% mono. Recovery was complete and the child left the hospital on the 9th day. During the acute phase of her illness she was seen in consultation by a neurologist and an ophthalmologist and the diagnosis of severe acute virus encephalitis was made.

In spite of the antibiotic therapy, it is my conviction that the unusually rapid recovery and absence of residual findings in this patient must be partially explained on the basis of UBI.
D. HEPATITIS: INFECTIOUS, SERUM.

The increasing incidence and seriousness of both infectious and serum hepatitis has become obvious since the middle years of this century. The former is more common but serum hepatitis is still a definite hazard in ordinary inoculations as well as both plasma and whole blood transfusions\(^1\). Acute viral hepatitis is usually a self-limiting disease with two clinically similar forms, the infectious and enteric infection, and the serum, which is apparently dependent on transmission by inoculation of transfusion, and has a longer viremic phase.

However, there has now appeared more and more, an acute fulminating hepatitis with death in a few days to two weeks after the onset of icterus, extreme weakness and positive laboratory findings. In addition, subacute hepatitis with a high incidence of mortality, is seen with increasing frequency after the apparent subsidence of all clinical and laboratory signs of illness. This increasing intractable type of hepatitis is usually diagnosed by liver puncture biopsy which shows increasing necrosis and fibrosis of the liver cells. These patients have usually had a previously diagnosed acute hepatitis, but not always.

In 1948, Miley and Christensen (8) published a paper on the use of UBI in acute virus and virus-like infections, noting for the first time, its use in two cases of hepatitis with dramatic results from both the clinical and laboratory standpoints.

In 1952, Woolfan and VanPohle (9) reported on 37 cases of viral hepatitis. They concurred in the conclusion that UBI appeared to be a very effective treatment for infectious hepatitis.

In 1955, Olney (10), in a monumental paper published the results of the use of UBI in viral hepatitis by 16 different UBI practitioners. There was complete unanimity in the opinion that UBI was the treatment par excellence as a safe and efficient means of controlling viral hepatitis. It is rather unusual to find 16 collaborators, all physicians with entirely different interests, to agree unanimously on anything. This work, essentially as published, appears later in this section.

In 1958, Weinman (11) reported on over 100 cases of viral hepatitis, concluding that UBI is a simple, safe and effective treatment of either the infectious or serum types, and that blood irradiation may be used diagnostically as well as therapeutically. He reported that no recurrence of the disease was noted in over 100 patients successfully treated, with follow up periods ranging from 2 to 9 years.

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\(^1\) Editors Note: This statement reflects the situation at the time this was originally reported, circa 1965.
The following criteria, considered by Stauffer as essential for positive diagnosis of viral hepatitis, were employed: Thymol turbidity (within two weeks of onset of jaundice), above 10 units; cephalin flocculation (within two weeks of onset of jaundice), 4 plus; urinary urobilinogen, over 1:40 dilution; serum bilirubin, above 1.2 mg. percent.

RESULTS OF TREATMENT

Tables I and II, below, list the forty-three cases covered by this report, indicating age, race and sex of patient, diagnosis, number of UBI's administered, number of days of illness after irradiation, recurrences, and follow-up period.

An average of 3.28 treatments per patient were administered in this series. Laboratory studies were employed to confirm clinical improvement, which occurred on an average of 19.2 days after institution of UBI. Sixty percent of the patients were considered clinically recovered and able to return to their occupations in two weeks or less.

CASE REPORTS

The following cases have been chosen as typical of those presented in this series:

Case 15. F.M., a twenty-eight-year-old white man, had complained of anorexia, nausea and pain in the right upper quadrant for three weeks. When first seen he was deeply jaundiced. Laboratory findings were as follows: Icteric index, 54 units; thymol turbidity, 15 units; cephalin flocculation, 4 plus; urinary urobilinogen in excess of 1:40 dilution and serum bilirubin in excess of high normal.

The patient was given one UBI and discharged from the hospital ten days later, clinically free of symptoms. All laboratory findings returned to normal at the end of two weeks. Patient has had no recurrences during the five-year follow-up period.

Case 16. M.O., a thirty-eight-year-old white woman, given a history of having clay-colored stools, very dark urine, and yellow scleras of one week's duration, with anorexia and nausea of two weeks' duration and weight loss of 5 pounds in the thirty-day duration of illness. Patient did not complain of abdominal pain before or after the onset of symptoms.

Examination revealed the following: icteric tinge to scleras in eyes, tongue shiny and coated, gingiva somewhat icteric, and skin pale lemon yellow tinge. The liver, kidney and spleen were not palpable; no tenderness was elicited to superficial or deep pressure. Moderate tympanitis was present. There was no distention and bowel sounds were normal.
The first UBI was administered by the Knott technique on May 1, 1948, after laboratory studies had confirmed the clinical diagnosis of infectious hepatitis. A second UBI was given one week later, at which time the patient reported having slept well since the previous UBI, with no attacks of pain or vomiting (which he had been reporting previous to the first UBI). There was an 8 pound weight gain. A third UBI was administered on May 15th, at which time the patient showed no evidence of relapse and had a weight gain to 130.5 pounds. A fourth UBI was given on June 15th, at which time the patient had gained a total of 18.5 pounds and laboratory studies had returned to normal.

Follow up examination on October 19th revealed the patient's weight to be 144 pounds, a total weight gain of 27 pounds. Re-examination four months later revealed no further attacks; maintenance of the weight gained and laboratory studies confirmed clinical recovery.

On April 14, 1949, the patient showed indications of relapse, at which time UBI therapy was again administered, although laboratory studies failed to confirm the existence of an acute attack of infectious hepatitis; cephalin flocculation was 2 plus, bromsulphalein in five minutes, 52%, thirty minutes 13%. Patient was again given UBI on May 9, 1949, and was hospitalized on May 24th because of recurrence of severe pain in right upper quadrant. X-ray studies revealed spasm of the duodenal sphincter and surgery was instituted because of the possibility of organic disease beyond the existence of chronic, active hepatitis. Operation consisted of: (1) adhesolysis, (2) Ramstedt pyloroplasty and (3) appendectomy.

Findings at operation revealed to following: Liver was not enlarged, margins were smooth, and numerous linear surface scars measuring 1 to 1.5 cm covered its anterior surface, associated with many small, yellowish plaques. The gallbladder was dilated and surrounded with numerous adhesions in the region of Hartmann's pouch and the cystic duct. The pylorus appeared somewhat thickened but there was no evidence of any recent of preexistent ulcer. No biopsy of the liver was made because inflammatory changes appeared to be non-specific and quiescent.

The patient recovered uneventfully and has had no further recurrences of viral hepatitis and no disability of any type.

**PREVENTION OF RECURRENCES**

Statistics with regard to the frequency of relapse in viral hepatitis vary from 0.6 to 18
<table>
<thead>
<tr>
<th>Case #</th>
<th>Age, Race, Sex</th>
<th>Diagnosis</th>
<th># of UBI’s Given</th>
<th>Clinical Impressions and Remarks</th>
<th># of Days to Complete Recovery Following UBI</th>
<th>Reurrences</th>
<th>Follow-up Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>29, W, M</td>
<td>Acute, Severe</td>
<td>6</td>
<td>Improvement noted after 1st UBI; patient discharged from hospital in 7 days much improved</td>
<td>13</td>
<td>None</td>
<td>3 yrs.</td>
</tr>
<tr>
<td>2</td>
<td>19, W, M</td>
<td>Acute, Mild</td>
<td>1</td>
<td>Improvement in 2 days</td>
<td>7</td>
<td>None</td>
<td>6 yrs.</td>
</tr>
<tr>
<td>3</td>
<td>44, W, M</td>
<td>Acute, Moderately Severe</td>
<td>1</td>
<td>Improvement noted 3 days after UBI</td>
<td>18</td>
<td>None</td>
<td>2.5 yrs.</td>
</tr>
<tr>
<td>4</td>
<td>35, W, F</td>
<td>Acute, Severe</td>
<td>2</td>
<td>Patient ill 10 days before treatment, improvement noted in 24 hrs.; marked improvement in 4 days</td>
<td>14</td>
<td>None</td>
<td>1 yr.</td>
</tr>
<tr>
<td>5</td>
<td>24, W, F</td>
<td>Acute, Very Severe</td>
<td>3</td>
<td>Patient ill 5 wks. prior to treatment; marked improvement in 3 days after first UBI; discharged from hospital in 13 days</td>
<td>14</td>
<td>None</td>
<td>4 yrs.</td>
</tr>
<tr>
<td>6</td>
<td>40, W, M</td>
<td>Acute, Moderately Severe</td>
<td>2</td>
<td>Marked improvement in 2 days</td>
<td>7</td>
<td>None</td>
<td>3.5 yrs.</td>
</tr>
<tr>
<td>7</td>
<td>52, W, M</td>
<td>Acute, Very Severe</td>
<td>2</td>
<td>Marked improvement 7 days; discharged from hospital completely recovered, 14 days; patient subsequently had surgery and 52 transfusions over 6 mo. period with no recurrence of serum hepatitis</td>
<td>14</td>
<td>None</td>
<td>5 yrs.</td>
</tr>
<tr>
<td>8</td>
<td>40, W, F</td>
<td>Acute, Moderately Severe</td>
<td>2</td>
<td>Patient presented complication of renal insufficiency; marked improvement in 48 hrs.</td>
<td>16</td>
<td>None</td>
<td>4 yrs.</td>
</tr>
<tr>
<td>9</td>
<td>45, W, M</td>
<td>Acute, Severe</td>
<td>5</td>
<td>Nausea disappeared after first UBI; appetite improved, jaundice disappeared after second</td>
<td>14</td>
<td>None</td>
<td>2 mo.</td>
</tr>
<tr>
<td>10</td>
<td>19, W, M</td>
<td>Acute, Moderately Severe</td>
<td>3</td>
<td>Improvement noted after first UBI; patient was heroin addict and reinfection rather than recurrence suspected</td>
<td>14</td>
<td>One, poss. re-infect.</td>
<td>1 yr.</td>
</tr>
<tr>
<td>11</td>
<td>56, W, M</td>
<td>Acute, Severe</td>
<td>2</td>
<td>Marked improvement noted in 2 wks.</td>
<td>30</td>
<td>None</td>
<td>3.5 yrs.</td>
</tr>
<tr>
<td>12</td>
<td>48, W, M</td>
<td>Acute, Severe</td>
<td>3</td>
<td>Patient ill 6 wks. prior to treatment without improvement; improvement noted 1 wk. from first UBI</td>
<td>42</td>
<td>None</td>
<td>5 yrs.</td>
</tr>
<tr>
<td>Case #</td>
<td>Age, Race, Sex</td>
<td>Diagnosis</td>
<td># of UBI's Given</td>
<td>Clinical Impressions and Remarks</td>
<td># of Days to Complete Recovery Following UBI</td>
<td>Recurrences</td>
<td>Follow-Up Period</td>
</tr>
<tr>
<td>--------</td>
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<td>--------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------</td>
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<td>------------------</td>
</tr>
<tr>
<td>30</td>
<td>20, W, F</td>
<td>Acute, Moderately Severe</td>
<td>2</td>
<td>Marked improvement in 11 days</td>
<td>21</td>
<td>None</td>
<td>5 yrs.</td>
</tr>
<tr>
<td>31</td>
<td>65, W, M</td>
<td>Acute, Severe</td>
<td>2</td>
<td>Some improvement 3 days; marked improvement 6 days</td>
<td>14</td>
<td>None</td>
<td>2 yrs.</td>
</tr>
<tr>
<td>32</td>
<td>31, W, F</td>
<td>Acute, Very Severe</td>
<td>4</td>
<td>Patient ill 3 wks. before treatment; marked improvement 2 days; discharged from hospital ambulatory; temperature normal in 4 days</td>
<td>16</td>
<td>None</td>
<td>4.5 yrs.</td>
</tr>
<tr>
<td>33</td>
<td>14, W, M</td>
<td>Acute, Very Severe</td>
<td>4</td>
<td>Patient ill 9 days before treatment; marked improvement in 5 days; discharged from hospital in 10 days</td>
<td>42</td>
<td>None</td>
<td>3 mo.</td>
</tr>
<tr>
<td>34</td>
<td>43, W, F</td>
<td>Acute, Very Severe</td>
<td>6</td>
<td>Patient ill 4 mo.; did not respond to conventional management; marked improvement 3 wks. after first UBI</td>
<td>90</td>
<td>None</td>
<td>2 yrs.</td>
</tr>
<tr>
<td>35</td>
<td>41, W, M</td>
<td>Acute, Very Severe</td>
<td>4</td>
<td>Patient ill 2 wks. before treatment; improvement noted 3 days after first UBI; discharged from hospital in 19 days</td>
<td>21</td>
<td>None</td>
<td>6 mo.</td>
</tr>
<tr>
<td>36</td>
<td>35, W, F</td>
<td>Acute, Severe</td>
<td>5</td>
<td>Marked improvement 1 wk.</td>
<td>14</td>
<td>None</td>
<td>2 yrs.</td>
</tr>
<tr>
<td>37</td>
<td>51, W, F</td>
<td>Acute, Severe</td>
<td>6</td>
<td>Progressive improvement to complete recovery after first UBI</td>
<td>14</td>
<td>None</td>
<td>2 yrs.</td>
</tr>
<tr>
<td>38</td>
<td>27, W, M</td>
<td>Acute, Very Severe</td>
<td>6</td>
<td>Patient ill 4.5 mo. prior to treatment; marked improvement 9 days after first UBI</td>
<td>17</td>
<td>None</td>
<td>2 yrs.</td>
</tr>
<tr>
<td>39</td>
<td>29, W, M</td>
<td>Acute, Moderately Severe</td>
<td>2</td>
<td>Patient gave history of initial attack in 1943, second in 1944, third in 1945; first UBI given in 1947; patient recovered in 1 wk.; recurrence in 1948, UBI again given with recovery in 1 wk.; no further recurrence</td>
<td>7</td>
<td>One, after first UBI, none after 2nd</td>
<td>6 yrs.</td>
</tr>
<tr>
<td>40</td>
<td>26, W, M</td>
<td>Acute, Very Severe</td>
<td>6</td>
<td>Patient gave history of initial attack in 1946 with three recurrences by 1950, at which time UBI given; improvement noted 5 days after first UBI</td>
<td>22</td>
<td>None</td>
<td>4.5 yrs.</td>
</tr>
<tr>
<td>41</td>
<td>49, W, F</td>
<td>Acute, Very Severe</td>
<td>5</td>
<td>Improvement after second UBI; jaundice disappeared after third UBI</td>
<td>28</td>
<td>None</td>
<td>4 mo.</td>
</tr>
</tbody>
</table>
or an average of 4.65 percent during a follow-up period averaging 3.56 years.

5. No deaths occurred among these forty-three patients.

6. A rapid subsidence of symptoms of nausea, vomiting, anorexia, pain and jaundice was noted in all patients treated, as well as a coincident trend back to normal of laboratory studies. Marked improvement was noted in twenty-seven patients within three days or less after institution of UBI. Eleven patients showed marked improvement in four to seven days and five patients were markedly improved in eight to fourteen days.

7. No untoward effects or unfavorable reactions were observed as the result of UBI in these patients and no patient was found unable to tolerate the therapy or to develop a resistance to it.

CONCLUSIONS:

It is believed that the Knott technique of UBI can be relied upon to terminate promptly an acute attack of viral hepatitis, to prevent recurrences, and to arrest liver damage as a result thereof.

ERF (15) ON PREVENTION OF SERUM HEPATITIS

Dr. Joseph Stokes, Jr., and his group at the Children’s Hospital, Philadelphia, feel quite confident at present that they have been able to grow, in tissue culture, the specific virus that causes homologous serum jaundice as well as the virus that causes infectious hepatitis. If true, this will be a great step forward in understanding these two disease processes.

Their work with human volunteers (16) is classical, through which they have been able to show that: (a) homologous serum jaundice is an entity serologically and virologically different from infectious hepatitis; (b) that ultraviolet light can alter the virus so that it is no longer infective; and (c) that UV rays probably specifically denatured the nucleoprotein of the virus.

Our experiences tend to confirm the studies of Stokes et. al.; we have not made similar studies with human volunteers because of the many and varied legal entanglements. In

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1 Originally published 1961.
This confirms the work of Stokes, et. al.

E. INFLUENZA

In epidemics of influenza, la grippe, or flu, which have been severe in recent years, e.g. Asiatic flu; all users of UBI have found that even the most severe cases can be efficiently controlled by UBI. In a patient suffering from Asiatic flu with fevers of 102 - 105 degrees daily for 5 - 7 days, and not helped by antibiotics or any other therapy, the influenza attack usually may be terminated in 24 - 38 hours with a rapid subsidence of toxic symptoms and fever, following the use of UBI. This may be applied at any stage of the infection; the earlier instituted, the better the results, and the easier it is on the patient. Of course, there may be irreversible changes present in some moribund patients, but generally the consensus among UBI practitioners is that most influenza patients with even advanced symptoms will respond rapidly to UBI. Certainly there is nothing else that we know of that can provide such dramatic and satisfactory results in influenza.

F. COMMON UPPER RESPIRATORY DISEASE

Inasmuch as there still exists a great deal of confusion about the many possible and still to be determined variants of acute upper respiratory disease of non-bacterial origin, it is impossible to be precise about the effect of any treatment. If we consider the common cold and acute upper respiratory infection due to advent of viruses, as the two most common variants, then at least we can give an opinion on the effect of UBI in these.

The main findings following the use of UBI, is that there is observed a marked increase in general resistance with a subsidence of the most troublesome symptoms of acute upper respiratory infection, whether bacterial or viral, in 24 - 48 hours. Fever, acute coryza, and general malaise will usually disappear rapidly; however, a dry cough may persist for several days in some instances, being worse at night.

In addition, these patients after treatment do not get worse or develop complications, such as sinusitis, severe bronchitis, otitis or pneumonia, unless certain common sense principles in the care of such patients are disregarded. They cannot be exposed to cold air or draughts during the first 24 - 48 hours after UBI, for then, there is usually present a marked increase in peripheral blood flow and vasodilation, as well as a high sensitivity to lowered temperatures and strong currents of air, especially cold air. If this latter precaution is taken, the acute upper respiratory infection is almost invariably easily controlled by UBI and complications avoided routinely, regardless of the infectious agent, whether viral or bacterial in nature.
The use of UBI in several cases of mumps was followed by a rapid decrease in the size of the parotid, rapid fall in temperature, and a complete relief from other symptoms such as headache, anorexia and general malaise. This occurred usually in 24 - 48 hours after a single treatment; if headache or fever persisted, a second treatment 48 hours after the first almost invariably terminated the disease. No complications of mumps have ever been noted following UBI.

In view of the rapid subsidence of all symptoms of mumps following UBI as well as the absence of complications, it is our opinion that mumps should be treated routinely with UBI.

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J. MONONUCLEOSIS - INFECTIOUS

In this disease of young people, characterized by lymphadenopathy, lymphocytosis with abnormal lymphocytes and a high concentration of serum agglutinins to sheep cells, UBI is considered a routine treatment by workers in this field.

Two to three days after one UBI, the toxic symptoms and lymphadenopothy usually will have subsided. Results are often dramatic. Several examples will illustrate:

A 20 year old Ohio State coed went to the University Hospital with complaints suggestive of infectious mononucleosis which clinical and laboratory investigation confirmed. It was recommended that she leave college and go home for recuperation and not try to return until the next school term, about 2 months away. She arrived home on a Friday night. Her parents called Dr. Gerald Grout in on consultation (a family friend). Dr. Grout recommended UBI therapy, and accordingly one irradiation was given Saturday morning and one on Sunday afternoon. The young lady returned to college the following day.

A 23 year old New York secretary found that it was going to be necessary to leave her job, due to diagnosed infectious mononucleosis. She consulted Dr. Armand Grez, who recommended UBI therapy. She received one irradiation, and returned to her job the next day, apparently recovered.

Dr. Grez treated his own 19 year old daughter who was sent home from school with suspected infectious mononucleosis which upon further evaluation proved to be the case. She responded to the first UBI treatment, stayed home during the Easter holidays, and returned to school fully recovered.

Again Dr. Grez had occasion to see a 16 year old high school girl, whose school physician had diagnosed infectious mononucleosis with suggested mild jaundice. His tests confirmed the previous diagnosis. Dr. Grez gave this young lady one irradiation. She returned to school, not to be heard from again, presumably fully recovered.
BACTERIAL DISEASES

A. Streptococcal Infections:
   (1) Sore Throat (hemolytic "strep"); (2) Rheumatic Fever; (3) Scarlet Fever;
   (4) Acute Tonsillitis and Otitis; (5) Lymphangitis and Lymphadenitis; (6)
   Erysipelas; (7) Streptococcus Septicemia.

B. Staphylococcal Infections:
   (1) Furuncles and Carbuncles; (2) Osteomyelitis; (3) Enteritis and Colitis; (4)
   Staphylococcus Septicemia.

C. Pneumonia:
   (1) Pneumococcus or Lobar; (2) Bronchopneumonia; (3) Virus or Primary
   Atypical; (4) Staphylococcus; (5) Influenza

D. Gonococcal Infections:
   (1) Acute Urethritis and Skenitis; (2) Acute and Chronic Salpingitis; (3) Acute
   Gonococcal Arthritis.

E. Bacillary Infections:
   (1) Hemophilus Influenzas; (2) Salmonella - Typhoid Fever, Septicemia; (3)
   Tuberculosis; (4) Brucellosis; (5) Escherichia Coli (E. Coli) Infections: a.
   Peritonitis; b. Pyelitis; c. E. Coli Septicemia.

F. Spirochetal Infections:
   (1) Syphilis; (2) Tropical Ulcer.

G. Tetanus
H. Rickettsias - Typhus Fever
|              | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
|--------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| **Patient**  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| **Major**    |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| **Minor**    |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| **Criteria** |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| **History of** |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| **Fever**    |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| **Carditis** |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| **Rheum. Fev.** |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| **Chorea**   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| **Palms**    |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| **Facies**   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| **Pneumonitis** |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| **Tachycardia** |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| **Nodules**  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| **Erythema** |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| **(continued)** |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

(22 Consecutive Hospitalized Rheumatic Cardiac Patients)  
Diagnostic Criteria  

**Table 1**
### TABLE II
Hospitalized Time of 22 Acute Carditis Patients

<table>
<thead>
<tr>
<th>No.</th>
<th>Sex</th>
<th>Race</th>
<th>Age&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Diagnosis on Admission</th>
<th>No. Past Attacks</th>
<th>No. of UBI's given in hospital</th>
<th>Days in Hospital Before UBI</th>
<th>Days in Hospital After UBI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F</td>
<td>B</td>
<td>3</td>
<td>Acute Rh.F. Carditis, Severe Acute Tonsillitis</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>28</td>
</tr>
<tr>
<td>2</td>
<td>M</td>
<td>W</td>
<td>5</td>
<td>Acute Rh.F. Carditis, C.O.M.</td>
<td>1</td>
<td>3</td>
<td>9</td>
<td>39</td>
</tr>
<tr>
<td>3</td>
<td>M</td>
<td>W</td>
<td>7</td>
<td>Acute Rh.F. Carditis</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>21</td>
</tr>
<tr>
<td>4</td>
<td>F</td>
<td>W</td>
<td>4</td>
<td>Acute Rh.F. Polyarthritis Carditis severe, A.O.M.</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>21</td>
</tr>
<tr>
<td>5</td>
<td>M</td>
<td>W</td>
<td>10</td>
<td>Acute Rh.F. Carditis, severe</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>6</td>
<td>F</td>
<td>W</td>
<td>10</td>
<td>Acute Rh.F. Carditis</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>19</td>
</tr>
<tr>
<td>7</td>
<td>M</td>
<td>W</td>
<td>4</td>
<td>Acute Rh.F. Carditis, severe</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>37</td>
</tr>
<tr>
<td>8</td>
<td>M</td>
<td>W</td>
<td>8</td>
<td>Acute Rh.F. Carditis, moderate</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>57</td>
</tr>
<tr>
<td>9</td>
<td>M</td>
<td>W</td>
<td>3</td>
<td>Acute Rh.F. Carditis Acute Catarrh. Jaundice</td>
<td>1</td>
<td>3</td>
<td>11</td>
<td>21</td>
</tr>
<tr>
<td>10</td>
<td>F</td>
<td>W</td>
<td>12</td>
<td>Acute Rh.F. Carditis</td>
<td>1</td>
<td>2</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>11</td>
<td>F</td>
<td>W</td>
<td>5</td>
<td>Acute Rh.F. Carditis, severe</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>29</td>
</tr>
<tr>
<td>12</td>
<td>F</td>
<td>W</td>
<td>3</td>
<td>Acute Rh.F. Carditis, Pneumonitis</td>
<td>0</td>
<td>3</td>
<td>11</td>
<td>16</td>
</tr>
<tr>
<td>13</td>
<td>M</td>
<td>B</td>
<td>5</td>
<td>Acute Rh.F. Carditis</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>15</td>
</tr>
</tbody>
</table>

<sup>1</sup> (On admission)
TABLE III
Comparison of Prevention of Recurrences
(Sulfa Compounds and UBI)

<table>
<thead>
<tr>
<th>Type of Treatment</th>
<th>Safely Administered</th>
<th>No. of Cases</th>
<th>No. of Patient Seasons</th>
<th>Recurrences (No., %)</th>
<th>Toxic Reactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kuttner: 1940-41:</td>
<td>Sulfanilamide</td>
<td>54</td>
<td>54</td>
<td>0, 0</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>(1.5-2 mg/kg daily, Oct.-June)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Controls</td>
<td>54</td>
<td>54</td>
<td>14, 26</td>
<td></td>
</tr>
<tr>
<td>Kuttner: 1941-42:</td>
<td>Same</td>
<td>54</td>
<td>54</td>
<td>1, 1.8</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>After acute stage only</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Same</td>
<td>50</td>
<td>50</td>
<td>9, 18</td>
<td></td>
</tr>
<tr>
<td></td>
<td>After acute stage only</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slocumb and Polley, 1944:</td>
<td>Sulfanilamide daily</td>
<td></td>
<td>751</td>
<td>12, 1.6</td>
<td>10-40%</td>
</tr>
<tr>
<td>Wolf, Rauh, and Lyon, 1945:</td>
<td>Sulfathiazole, sulfadiazine daily</td>
<td></td>
<td>70</td>
<td>53, 28</td>
<td>11% albuminuria, 5% mild leucopenia</td>
</tr>
<tr>
<td></td>
<td>After acute stage only</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W., R., L., 1947:</td>
<td>Same</td>
<td>120</td>
<td>177</td>
<td>11, 6.2</td>
<td>20.9%</td>
</tr>
<tr>
<td></td>
<td>After acute stage only</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wasson, Mile, and Dunning, 1946-49:</td>
<td>UBI, Knott Technique, 6-8 yearly</td>
<td></td>
<td>107</td>
<td>250</td>
<td>2, 0.8</td>
</tr>
<tr>
<td></td>
<td>In acute stage or later</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

*Two subacute bacterial endocarditis.

At no time were we able to find any evidence of a progression of valvular heart disease or myocarditis once UBI had been instituted, although when first seen these children all were suffering from a rapidly progressing carditis. On the contrary, all of the children with severe carditis and marked murmurs showed remarkable and maintained improvement.

**THE PREVENTION OF RECURRENCE**

The prevention of recurrence, a study which forms the second part of this report, has required (over a period of 2 to 4 years) a great deal of care in the form of constant observation in the Children's Cardiac Clinic of the New York Infirmary, as well as treatment
valvular heart damage; in all cases, including several with advanced mitral disease., there was definite cardiac improvement. Cardiac murmurs generally became less audible or disappeared entirely after 2 years.

(5) The exercise tolerance of all these children except one became normal.

(6) The almost complete absence of recurrences indicates that the rheumatic state probably was terminated at about the time of hospital discharge.

(b) Prophylactic effects:

(1) In the 107 patients under this therapy for 2 to 4 years (1946-1949) we have had 2 recurrences following upper respiratory infection, an incidence of 0.8% for 250 patient seasons. This compared favorably with the use of sulfa compounds prophylactically.

(2) No children had to be dropped for failure to tolerate this treatment, in contrast to sulfa prophylaxis.

(3) There have been no new valvular lesions appearing in any of these children.

(4) No other prophylactic treatment has been given.

(5) It is extremely important that these children receive additional blood irradiations during attacks of upper respiratory infections. (The 2 children with recurrences did not have treatment during such an attack). These attacks, including acute streptococcal infections, are rapidly controlled by UBI before actual rheumatic fever can recur.

ADVANTAGES OF ULTRAVIOLET BLOOD IRRADIATION

(a) It is an outpatient treatment and also easily adaptable for bedside use if necessary.

(b) No special nursing or medical care is needed.

(c) No large amount of laboratory work is necessary for the long-term prophylactic use.

(d) No harmful effects have ever been observed.
short time, i.e., 3 weeks or less.

(b) The results of the use of UBI to prevent recurrences in 107 cases of rheumatic fever over a period of 2 to 4 years have been given. The 2 recurrences (0.8%) compare favorably with results obtained prophylactically with sulfa drugs, which also prevent recurrences. No patients had to be excluded because of inability to tolerate UBI, in contrast to the sulfa compounds.

CONCLUSION

UBI therapy can be relied upon consistently to terminate an attack of acute rheumatic fever in children and to exert a prophylactic effect against rheumatic recurrences and further heart damage for at least 2 to 4 years.

In a follow-up study, Wasson and Miley reported in 1953 to the American Rheumatism Association, the results of 6 years experience with UBI used to control rheumatic fever and carditis in 120 children, in all stages of the disease. The prevention of recurrences (mentioned as likely in the earlier study) was confirmed, with 2 recurrences only, both of which responded to a single UBI. The 2 children convalesced uneventfully and had no further recurrences.

3. Scarlet Fever. The use of UBI in scarlet fever has almost invariably resulted in a rapid control of the acute infection. In the several cases seen by the authors a rapid subsidence of toxic symptoms appears in a few hours and usually in 48 hours the patient is markedly improved. In one patient, however, otitis media developed despite 3 UBI's and only subsided some weeks later.

No nephritis has ever been seen following the use of UBI in scarlet fever or other strep infection. Several patients who were referred for treatment of acute glomerulonephritis following failure of penicillin or other antibiotics to control severe and recurrent "strep" infections including scarlet favor, responded very well to UBI; all signs and symptoms of the renal inflammatory process subsided in a few days.

4. Acute Tonsillitis, Otitis. The use of UBI in acute tonsillitis has been chiefly to control the acute phase of the disease rapidly and allow surgical removal a few days later of the diseased tonsils without any worry of a spread of the infection. This is especially valuable in children with rheumatic fever and carditis, as well as those suffering other complications of streptococcal infections.

Acute otitis media has been treated by UBI and one may say that usually this complication can be avoided by early application of UBI in "strep" sore throat; and that UBI will control the infection frequently, allowing it to subside. However, if myringotomy is indicated, it has to be performed, since UBI is no substitute for surgery when the latter is indicated.
J.D. a male, 22 years of age, was admitted to Columbus Hospital, Seattle Washington, on January 6, 1936, with a temperature of 102° F, and a pulse of 70.

Patient had been hit by a car on December 26, 1935, and was found by the side of the road and taken to an Army Post Hospital where ten stitches were placed in a scalp wound on the right side. He stayed at that hospital overnight and was treated later at the doctor's office. The stitches were removed about January 1. Patient claimed that infection had set in and the scalp wound had become swollen with resultant closure of the right eye. Headaches persisted since the accident but no X-rays had been taken. Continual hot packs had reduced the swelling which became localized behind his right ear and beneath the right cheek.

On the day of admission he noticed the presence of a sore throat with tenderness over the right mastoid region. There was no complaint of pain in the ear.

Physical examination revealed the patient to be fairly comfortable but the head was held in a fixed position. There was some fever and swelling of the right cervical glands. The scalp wound was indurated with some exudation. The genitourinary and gastrointestinal examinations were negative. The blood cultures were returned positive for hemolytic streptococcus.

The patient was given two blood irradiations and the cultures became negative within 24 hours after the second irradiation. From then on his recovery was uneventful. The diagnosis in this case was cellulitis of the scalp wound and hemolytic streptococccic septicemia.

Included in Hancock's paper are detailed histories of 4 cases of streptococcus hemolyticus septicemia (refer to Figures 1 and 2, below), plus that of 2 cases of staphylococcemia and one of colon bacillus septicemia, in all of which recovery occurred promptly after the use of UBI.
Heinemann Hospital, Philadelphia (Dr. H. Crown, N. Pa.)

In the second week of the patient's convalescence, the first urine was given eight days later. From that time on, the urine became negative, and forty-eight hours later, the patient was free of all evidence of illness. Peritoneal biopsy following cessation of serial culture tests following cessation of the initial treatment showed a non-heamolytic Streptococcus Sepsepsis to develop. Two days after antibiotics were stopped, the patient had a relapse. The urine became positive again.

FIGURE 2: At the time of initial UDI, the patient had a febrile temperature.
Case #3: M.C., 17 Oakbluff, Bristol, Conn. Furuncles in left axilla. 2 UBI treatments, March 26 and 29, 1956, opened by itself, much pus. Complete cure within few days. On July 2, 1956, patient had a recurrence in right axilla; same therapy with cure.

Case #4: J.A., So. Brooks Street, Forestville, Conn. Jan. 21, 1956 and Jan. 25 UBI for furunculosis. Good recovery. Feb. 2, 1956 patient had another boil. She received one UBI and to my knowledge has been free since.

Case #5: J.W. (M.D. Anesthesiologist), Bristol Hospital, Bristol, Conn. Patient was hired by the Bristol Hospital in June 1958, worked for approximately two weeks and was not allowed to work thereafter due to furunculosis. Patient was under treatment with various antibiotics until Aug. 20, 1958 without results. Patient then received UBI on Aug. 20, 21, 25, and 26, 1958. Recovered within two weeks. I presume that patient remained symptom free as he left Bristol and went to Norwich, Conn. to continue his special work.

Laplume's experience with UBI has been confirmed by many other workers. UBI can thus be relied upon to control recurrent furunculosis and carbunculosis as well as the most malignant types and the most acute stages of the same.

The first and second UBI treatments are usually given several days apart, and then at 2, 4, 6 and finally 12 week intervals as may be required.

2. **Osteomyelitis.** Before the advent of penicillin most of the users of UBI had some experience with the use of UBI in osteomyelitis. The consensus of opinion was the acute osteomyelitis without sequestra formation often responded very well to UBI, even with an associated septicemia.

However, once the osteomyelitis had become chronic and sequestra formation had occurred, removal surgically of the necrotic bone was an obvious necessity. UBI was also used to control spread of infection, as in this respect it was a very valuable aid to the surgeon. UBI may be relied upon to control spread of infection before, during and after sequestrectomy.

3. **Enteritis, Colitis.** Before the advent of the broad spectrum antibiotics and in the early days of the sulfas, we used UBI in many types of enteritis and colitis, including those due to deep secondary staphylococcus infection of the small intestines and colon. In most of the advanced cases of chronic enteritis and colitis there was observed general improvement, but frequently large sections of the involved intestinal areas had to be excised.

However, in patients with enteritis or colitis not responding to antibiotics today, UBI should always be tried.
TABLE V
(Miley - Staphylococcemia)

<table>
<thead>
<tr>
<th>No.</th>
<th>Hospital No.</th>
<th>Type of Staphylococcemia</th>
<th>Primary Infection</th>
<th>Type of Sulfra Drugs Used</th>
<th>No. of UBI’s</th>
<th>No. of Hospital Days; Total / Post-UBI</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>81994</td>
<td>Aureus</td>
<td>Marked erysipeloid inflammatory process of right ear</td>
<td>ST¹</td>
<td>1</td>
<td>20, 12</td>
<td>R</td>
</tr>
<tr>
<td>2</td>
<td>84630</td>
<td>Aureus</td>
<td>Incomplete septic abortion</td>
<td>None</td>
<td>1</td>
<td>16, 11</td>
<td>R</td>
</tr>
<tr>
<td>3</td>
<td>88168</td>
<td>Aureus</td>
<td>Incomplete septic abortion</td>
<td>None</td>
<td>2</td>
<td>19, 16</td>
<td>R</td>
</tr>
<tr>
<td>4</td>
<td>88167</td>
<td>Aureus</td>
<td>Incomplete septic abortion</td>
<td>None</td>
<td>1</td>
<td>10, 9</td>
<td>R</td>
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<tr>
<td>5</td>
<td>82484</td>
<td>Aureus</td>
<td>Incomplete septic abortion</td>
<td>None</td>
<td>1</td>
<td>20, 7</td>
<td>R</td>
</tr>
<tr>
<td>6</td>
<td>83141</td>
<td>Albus</td>
<td>Acute ulcerative rhinitis, acute suppurative otitis media, acute mastoiditis,</td>
<td>None</td>
<td>2</td>
<td>39, 17</td>
<td>R</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>incomplete septic abortion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>82702</td>
<td>Albus</td>
<td>Incomplete septic abortion, putrid endometritis, parametritis, pelvic peritonitis</td>
<td>None</td>
<td>2</td>
<td>12, 7</td>
<td>R</td>
</tr>
<tr>
<td>8</td>
<td>86768</td>
<td>Aureus</td>
<td>Post-measles upper respiratory infection</td>
<td>None</td>
<td>2</td>
<td>19, 16</td>
<td>R</td>
</tr>
<tr>
<td>9</td>
<td>50698</td>
<td>Albus</td>
<td>Post-cesarean pelvic thrombophlebitis</td>
<td>None</td>
<td>1</td>
<td>33, 11</td>
<td>R</td>
</tr>
</tbody>
</table>

KEY: ST = Sulfathiazole. R = Recovered.

SUMMARY

There has been presented a report and analysis of 16 cases of staphylococcemia given UBI therapy as a method of controlling this type of acute pyogenic infection.

The first 7 staphylococcemtic individuals treated by UBI therapy failed to respond and died. Six of these 7 received intensive sulfa drug therapy, whereas the seventh, whose staphylococcemia arose from a bladder carcinoma and was complicated by atelectasis and

¹ Before appearance of staphylococcemia.
successful in controlling staphylococcemia, at least in 9 consecutive cases.

(g) Finally, the use of UBI therapy is preferable to the use of sulfa drugs in the treatment of staphylococcemia.

The following temperature charts are presented as excerpts from the same article (see notes on Figures 3 - 6, following):

**FIGURES 3 and 4**

![Temperature charts](image)

**Figure 3:**

(Group I, Case VI). This patient developed Staphylococcus aureus septicemia following removal of an ingrown toenail by a chiropodist. Intensive sulfathiazole therapy failed to control the septicemia, as did subsequent UBI therapies and more sulfathiazole therapy, with death as final result.

**Figure 4:**

(Group I, Case III). This patient was admitted with Staphylococcus aureus septicemia secondary to incomplete septic abortion, and failed to show any response following a single UBI but within twenty-four hours after a second UBI her temperature fell to normal and all her toxic symptoms disappeared, convalescence being uneventful.
C. PNEUMONIA

The effect of UBI in pneumonia is an excellent and non-specific one. This is a tremendous advantage, for it makes no difference what the type of pneumonia is, since all types respond rapidly and favorably to UBI. In other words, a severe atypical or virus pneumonia will respond as well as lobar pneumonia, bronchopneumonia or staphylococcus pneumonia. Consequently the physician who treats a pneumonia patient with UBI doesn't have to worry whether the etiological agent is either a pneumococcus or a staphylococcus, or neither. He must stop all sulfa drugs immediately if they are being prescribed.

For practical purposes we shall discuss the use of UBI in four chief varieties of pneumonia, namely: pneumococcus or lobar pneumonia, bronchopneumonia, staphylococcus pneumonia and virus or atypical pneumonia¹.

1. **Pneumococcus or Lobar Pneumonia.** One of the most dramatic events first observed in the early days of UBI was the response to this therapy by patients suffering from pneumococcus pneumonia. The classical effect here has been the rapid relief of dyspnea and subsidence of cyanosis, frequently as the irradiated blood was returned to the patient. In a matter of minutes in some cases, the aspect of the dyspneic, cyanotic patient changed almost miraculously. The subsequent drop of fever to normal temperature occurred usually in a few days, as consolidation of the lung fields disappeared and resolution increased.

If a concomitant pneumococcus septicemia were present, a second or third UBI was found to be necessary regardless of the type of pneumococcus present as the etiologic agent. Patients with lobar pneumonia recover spectacularly and with almost monotinous regularity. The exception to this occurs in hopelessly moribund cases in which chemotherapy has failed to control the infection but has been continued fruitlessly, superimposing the toxic effects of the drug upon the toxic symptoms produced by the pneumococcus.

As mentioned above, a subsidence of toxic symptoms usually occurs in 12-36 hours following UBI. Mental confusion disappears first, the temperature falls in 24-46 hours along with the pulse rate and respiratory rate, the temperature usually falling by crisis. The rapid disappearance of cyanosis, often within a few minutes to an hour in many instances, is most striking. When this occurs, oxygen should rarely be continued, as a hyperventilation syndrome or occasionally a mechanical bronchial irritation may ensue, and there is really no need for the oxygen any longer, so rapidly do such post-irradiation patients pick up atmospheric oxygen. A complete post-irradiation subsidence of toxic symptoms, including low pulse rate, accompanied by a high respiratory rate (30-44) with

¹ Regarding atypical or virus pneumonia, see also Chapter IV.
Whereas in lobar pneumonia, X-ray signs of consolidation disappear within the first few post-irradiation days, in severe bronchopneumonia the X-ray signs of pulmonary pathology slowly recede in 5 to 10 days following UBI. If the bronchopneumonia is not too severe, all X-ray signs of pathology disappear in about 4 or 5 days; similarly the clinical signs of early or moderately advanced bronchopneumonia recede rapidly in the first 2 or 3 post-irradiation days.

3. **Virus or Primary Atypical Pneumonia**. This type of pneumonia has certain characteristics which distinguish it from all other pneumonia. These are, briefly: The frequent absence of physical findings, a low leucocyte count (unless secondary infection is present), a soft infiltration of the pulmonary fields on roentgenological examination, often persistent for weeks or even months; a tendency to relapse in some cases, but definitely a self-limited disease process; a low mortality rate; frequently a long hospitalization time; less cyanosis; less dyspnea; no microorganism found to causative agent.

In addition to these differences, there are certain similarities, notably a severe and persistent cough, with or without a bloody sputum; often a severe toxemia with fever up to 104-105°, chest pain, the presence of rales in some cases; and a high sedimentation rate.

A single blood irradiation is usually sufficient to bring a rapid clinical response in these uncomplicated cases of virus pneumonia plus an incredibly rapid disappearance of the X-ray signs of soft pulmonary field infiltration, which do not reappear. The following events are seen to occur consistently in atypical pneumonia treated by UBI alone:

(a) A fall to normal of abnormally high temperatures in 24-48 hours following UBI.
(b) A complete clearing of the X-ray signs of pulmonary pathology in 2-5 days.
(c) A disappearance of rales, when present, in 1-3 days.
(d) A cessation of coughing in 4-7 days.
(e) A drop to normal of the sedimentation rate varying from 2 to 10 days.

If secondary infection is also present, the results are almost as good, possibly one day later in appearing, provided no sulfa drugs have been used. If sulfa drugs have been used for 24-36 hours in uncomplicated atypical pneumonia, the results are somewhat slower and less dramatic but are invariably favorable; convalescence in such cases is prolonged about one week, due to the toxic effects of the sulfas, which of course are withdrawn before UBI.

A return of the sedimentation time to normal plus a favorable clinical X-ray picture is usually indicative of complete recovery. The presence of a favorable clinical picture alone should not be relied upon as an index of recovery as relapses are common in this type of pneumonia. Thus the X-ray picture and sedimentation rate should be proved normal before releasing such patients to normal activity.
3. **Acute Gonococcal Arthritis.** Since UBI controls gonococcal infections quite well, it has been of value in the occasional case of arthritis seen before modern antibiotics were found to control such acute infection of the joints. Nevertheless in the occasionally resistant gonococcal infection with acute joint symptoms UBI should always be considered, especially before too much damage has been done to the afflicted joint by the resistant infection.

---

**E. BACILLARY INFECTIONS**

In general these respond quite well to UBI.

1. **Hemophilus Influenzae.** There is very little written about the use of UBI in proven cases of H. influenzae, though it has been used in occasional cases, chiefly of influenzae pneumonia, which disease is easily controlled by UBI.

2. **Salmonella - Typhoid Fever, Septicemia.** Miley observed the effects of UBI in a case of Salmonella septicemia, in which the patient, a white woman of 35, had been suffering for 4 weeks from a septic parametritis and probably pelvic thrombophlebitis with positive blood cultures for more than 2 weeks. The patient appeared to be approaching a terminal state when UBI was first applied. She improved slightly after two days, but the blood culture remained positive; a second UBI was given 2 days after the first and this time a marked subsidence of toxic symptoms and fever occurred and the blood culture became negative. A week later a third UBI was given because the patient's temperature began to rise again; blood culture taken at this time was positive again for Salmonella. A fourth UBI was given 3 days after the third; blood cultures from this time on remained negative and the patient slowly recovered, leaving the hospital about 3-4 weeks after UBI was first begun. No other antibiotics were used once UBI was started.

Rebecca and Lewis (4) in 1949 published a significant paper on the use of UBI in typhoid fever. They made a comparative study of typhoid patients who received UBI alone, UBI with antibiotics and antibiotics alone. Those typhoid patients who received UBI alone convalesced more rapidly and uneventfully than those who received UBI and antibiotics and much more so than those who had only antibiotics.

3. **Tuberculosis.** The authors have had very little experience with acute pulmonary tuberculosis. Knott stated that Hancock and he had used UBI in several early and moderately advanced cases of pulmonary tuberculosis, but no reports were made of the results (which they said were excellent). With modern drugs so successful, work with UBI has not been pursued for this disease. In the occasional refractory case, it would be interesting to know if, or not, UBI might be of value.
TABLE VI
Report on Detoxification Effect Following UBI in Generalized Peritonitis

<table>
<thead>
<tr>
<th>Case No.</th>
<th>History No.</th>
<th>Age</th>
<th>Sex</th>
<th>Condition at Time of Initial UBI</th>
<th>Detox. Time (Early, Complete)</th>
<th>No. of UBI’s</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>H 55321</td>
<td>44</td>
<td>F</td>
<td>M.A.</td>
<td>24, 72</td>
<td>1</td>
<td>R</td>
</tr>
<tr>
<td>2</td>
<td>S 90679</td>
<td>55</td>
<td>M</td>
<td>M.A.</td>
<td>24, 48</td>
<td>1</td>
<td>R</td>
</tr>
<tr>
<td>3</td>
<td>H 67575</td>
<td>20</td>
<td>M</td>
<td>A.M.</td>
<td>24, 48</td>
<td>1</td>
<td>R</td>
</tr>
<tr>
<td>4</td>
<td>S 90923</td>
<td>17</td>
<td>M</td>
<td>M.A.</td>
<td>24, 72</td>
<td>2</td>
<td>R</td>
</tr>
<tr>
<td>5</td>
<td>H 55762</td>
<td>34</td>
<td>M</td>
<td>M.A.</td>
<td>48, 72</td>
<td>1</td>
<td>R</td>
</tr>
<tr>
<td>6</td>
<td>S 91913</td>
<td>35</td>
<td>F</td>
<td>M.A.</td>
<td>24, 48</td>
<td>1</td>
<td>R</td>
</tr>
<tr>
<td>7</td>
<td>H 37339</td>
<td>52</td>
<td>M</td>
<td>A.M.</td>
<td>24, 120</td>
<td>3</td>
<td>R</td>
</tr>
<tr>
<td>8</td>
<td>S 74019</td>
<td>11</td>
<td>F</td>
<td>M.A.</td>
<td>48, 72</td>
<td>1</td>
<td>R</td>
</tr>
<tr>
<td>9</td>
<td>H 55738</td>
<td>11</td>
<td>F</td>
<td>M.A.</td>
<td>24, 48</td>
<td>1</td>
<td>R</td>
</tr>
<tr>
<td>10</td>
<td>S 71033</td>
<td>17</td>
<td>M</td>
<td>A.M.</td>
<td>24, 48</td>
<td>1</td>
<td>R</td>
</tr>
<tr>
<td>11</td>
<td>H 59266</td>
<td>17</td>
<td>M</td>
<td>M.A.</td>
<td>48, 120</td>
<td>2</td>
<td>R</td>
</tr>
</tbody>
</table>

*continued*

1. M.A. = Moderately Advanced; temperature, pulse and respiratory rates exceed 101-102 F, 100-110 and 24-25 respectively, and such toxic symptoms as nausea, vomiting, restlessness irritability and mental confusion are excessive.

A.M. = Apparently Moribund; symptoms present are a combination of those advanced symptoms commonly considered near terminal or terminal; namely, coma, rapidly falling blood pressure in some instances, cardiac irregularity, irregular and shallow respirations, obvious loss of thermotactic control, and often associated septicemia.

2. Detoxification time is arbitrarily divided into two components, early and complete, which are defined respectively as: first, the time in hours which elapses between initial UBI and early signs of subsidence of toxic symptoms; second, the time in hours elapsing between initial UBI and a complete detoxification effect, i.e., that point at which it becomes clearly evident that the patient's condition is no longer precarious.

3. R = Recovered; D = Died.
Table VI, cont.

<table>
<thead>
<tr>
<th>Case No.</th>
<th>History No.</th>
<th>Age</th>
<th>Sex</th>
<th>Condition at Time of Initial UBI</th>
<th>Detox. Time (Early, Complete)</th>
<th>No. of UBI's</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>36</td>
<td>S 76608</td>
<td>19</td>
<td>F</td>
<td>A.M. not operated</td>
<td>no detox.</td>
<td>1</td>
<td>D</td>
</tr>
<tr>
<td>37</td>
<td>S 81817</td>
<td>54</td>
<td>M</td>
<td>A.M.</td>
<td>no detox.</td>
<td>1</td>
<td>D</td>
</tr>
<tr>
<td>38</td>
<td>S 86406</td>
<td>54</td>
<td>F</td>
<td>A.M. atelectasis, cardiac failure</td>
<td>no detox.</td>
<td>2</td>
<td>D</td>
</tr>
<tr>
<td>39</td>
<td>S 95027</td>
<td>50</td>
<td>F</td>
<td>A.M. atelectasis, cardiac failure</td>
<td>no detox.</td>
<td>3</td>
<td>D</td>
</tr>
<tr>
<td>40</td>
<td>H 42036</td>
<td>27</td>
<td>F</td>
<td>M.A.</td>
<td>24, 48</td>
<td>1</td>
<td>R</td>
</tr>
</tbody>
</table>

Summary of Table VI:

- Complete detoxification in 32 cases
- No detoxification in 8 cases
- Average detoxification time: Early, 34.5 hours; Complete, 81.75 hours
- 23 out of 23 Moderately Advanced or 100% recovery
- 9 out of 17 Apparently Moribund or 53% recovery
- 26 received one UBI; 9 received two UBI's; 5 received more than two UBI's

TABLE VII

Report of Detoxification Effect Following UBI in Localized Peritonitis, Appendiceal Abscess

<table>
<thead>
<tr>
<th>Case No.</th>
<th>History No.</th>
<th>Age</th>
<th>Sex</th>
<th>Condition at Time of Initial UBI</th>
<th>Detox. Time (Early, Complete)</th>
<th>No. of UBI's</th>
<th>Result</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>S 83105</td>
<td>32</td>
<td>M</td>
<td>A.M.</td>
<td>24, 48</td>
<td>1</td>
<td>R</td>
</tr>
<tr>
<td>2</td>
<td>S 84113</td>
<td>17</td>
<td>M</td>
<td>M.A.</td>
<td>48, 72</td>
<td>1</td>
<td>R</td>
</tr>
<tr>
<td>3</td>
<td>S 72507</td>
<td>41</td>
<td>M</td>
<td>A.M.</td>
<td>24, 48</td>
<td>1</td>
<td>R</td>
</tr>
<tr>
<td>4</td>
<td>S 71301</td>
<td>22</td>
<td>M</td>
<td>M.A.</td>
<td>12, 48</td>
<td>1</td>
<td>R</td>
</tr>
<tr>
<td>5</td>
<td>S 71542</td>
<td>11</td>
<td>M</td>
<td>M.A.</td>
<td>24, 48</td>
<td>1</td>
<td>R</td>
</tr>
</tbody>
</table>

continued

1 See Table VI, above, for key.
### TABLE VIII
Report of Detoxification Effect Following UBI
in Pelvic Peritonitis, Multiple Pelvic Abscesses

<table>
<thead>
<tr>
<th>Case No.</th>
<th>History No.</th>
<th>Age</th>
<th>Sex</th>
<th>Condition at Time of Initial UBI&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Detox. Time (Early, Complete)&lt;sup&gt;1&lt;/sup&gt;</th>
<th>No. of UBI's</th>
<th>Result&lt;sup&gt;1&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>S 88538</td>
<td>33</td>
<td>F</td>
<td>A.M.</td>
<td>48, 72</td>
<td>1</td>
<td>R</td>
</tr>
<tr>
<td>2</td>
<td>H 40602</td>
<td>43</td>
<td>F</td>
<td>M.A.</td>
<td>120, 144</td>
<td>2</td>
<td>R</td>
</tr>
<tr>
<td>3</td>
<td>H 52080</td>
<td>26</td>
<td>F</td>
<td>M.A.</td>
<td>24, 72</td>
<td>1</td>
<td>R</td>
</tr>
<tr>
<td>4</td>
<td>H 52365</td>
<td>28</td>
<td>F</td>
<td>M.A.</td>
<td>24, 48</td>
<td>1</td>
<td>R</td>
</tr>
<tr>
<td>5</td>
<td>H 55364</td>
<td>25</td>
<td>F</td>
<td>A.M.</td>
<td>48, 96</td>
<td>2</td>
<td>D&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>6</td>
<td>H 36760</td>
<td>45</td>
<td>F</td>
<td>A.M.</td>
<td>24, 36</td>
<td>1</td>
<td>R</td>
</tr>
<tr>
<td>7</td>
<td>H 37964</td>
<td>23</td>
<td>F</td>
<td>A.M.</td>
<td>96, 120</td>
<td>2</td>
<td>R</td>
</tr>
<tr>
<td>8</td>
<td>H 51921</td>
<td>33</td>
<td>F</td>
<td>A.M.</td>
<td>48, 96</td>
<td>2</td>
<td>R</td>
</tr>
<tr>
<td>9</td>
<td>H 54003</td>
<td>40</td>
<td>F</td>
<td>A.M.</td>
<td>48, 96</td>
<td>1</td>
<td>R</td>
</tr>
<tr>
<td>10</td>
<td>H 67446</td>
<td>27</td>
<td>F</td>
<td>A.M.</td>
<td>96, 120</td>
<td>2</td>
<td>R</td>
</tr>
<tr>
<td>11</td>
<td>H 56102</td>
<td>23</td>
<td>F</td>
<td>A.M.</td>
<td>24, none</td>
<td>3</td>
<td>D&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>12</td>
<td>H 64296</td>
<td>34</td>
<td>F</td>
<td>A.M.</td>
<td>48, none</td>
<td>2</td>
<td>D&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Summary of Table VIII:

- Complete detoxification in 10 cases
- Incomplete detoxification in 2 cases
- Average detoxification time: Early, 54 hours; Complete, 90 hours
- 3 out of 3 Moderately Advanced or 100% recovery
- 6 out of 9 Apparently Moribund or 67% recovery
- 5 received one UBI; 6 received two UBI's; 1 received more than two UBI's

---

<sup>1</sup> See Table VI, above, for key.

<sup>2</sup> Died of operative shock.

<sup>3</sup> Died of sigmoid carcinoma (both patients).
arthritics and chronic colitis, and after physical examination which revealed a soft abdomen with little or no tenderness, it was felt that she did not have an acute abdomen. However, because of the character of her pain and a leukocyte count of 14,500 she was admitted to the hospital for observation. The following morning, 8/9/40, nausea and vomiting appeared for the first time and her abdomen was moderately tender and rigid. Exploratory laparotomy was performed immediately and generalized peritonitis was present with free pus in the general peritoneal cavity. Appendix was removed and drain inserted into the peritoneal cavity. On 8/10/40, patient appeared extremely toxic and it was decided to use UBI therapy as a control of peritoneal infection. This was instituted the morning of 8/10/40 and within 24 hours the patient's toxic symptoms had vanished and within 72 hours she was obviously out of danger. She convalesced uneventfully and was discharged on 9/17/40 in apparently excellent condition. (See Figure 8.)

(2) Case 2, Table I (S 90679) (Figure 9): 55-year-old man; acute generalized peritonitis from perforated gangrenous appendix. Patient was admitted to the service of Dr. E.W. Rebbeck at the Shady Side Hospital one 4/1/41. He gave a history of sudden onset of pain in the right lower quadrant with nausea and vomiting, beginning 3/30/41. The pain was cramp-like in nature and he took a laxative. The pain receded somewhat and then became worse by the evening of 3/31/41, or about 16 hours before admission. The abdomen showed general tenderness and rigidity with moderate distention; no peristalsis was heard. The pain and rigidity were more pronounced in the lower right quadrant. His admission temperature was 101.8, pulse 120, and respirations were 24. His blood count showed 12,100 leukocytes, 88 per cent neutrophils (48 per cent filament and 40 percent non-filament). Toxemia was moderate. Preoperative UBI therapy was given and the patient was operated on immediately.

At operation a gangrenous, perforated appendix was found with a considerable quantity of colon-odored pus present in the ileocecal fossa. The adjacent loops of small intestine were quite distended; as yet no amount of plastic exudate was present. There was no attempt to wall of the pus; the abdomen was not further explored. The appendix was removed and a cigarette drain placed in the ileocecal fossa. The operation was done under spinal anesthesia. The pus cultured E. Coli. The patient stood the operation well. The usual routine for peritonitis, consisting of fluids by vein, Pitressin, hot supes, gastric lavage and morphine sulfate, was followed. The next day peristalsis was present, there was less distention, and the abdomen was softer. The patient's general condition was good. He made steady improvement and was up in the wheelchair on his ninth postoperative day. He was discharged on this thirteenth postoperative day in good condition. His subsequent convalescence was uneventful. (See Figure 9.)

(3) Case 3, Table I (S 67575) (Figure 10): 20 year-old man; generalized peritonitis secondary to acute perforating gangrenous appendicitis. Patient was admitted 9/12/41 complaining of acute abdominal pain and giving a history of onset of attack with nausea three days previously. Physical examination revealed presence of acute abdomen; lab-
Patient S 90679. Male, 55, with generalized peritonitis following rupture of a gangrenous appendix, was given UBI therapy preoperatively soon after admission to hospital; this was followed immediately by appendectomy. An early subsidence of distention and other toxic symptoms was evident and the patient convalesced uneventfully, leaving the hospital in apparently excellent condition on the thirteenth postoperative day.

Laboratory examination revealed leukocyte count of 13,100 at admission; this rose to 20,000 two hours later. Definite acetonuria was present. Laparotomy was performed two hours after admission and generalized peritonitis secondary to acute gangrenous appendicitis was found to be present. The appendix was removed, sulfanilamide powder was placed in the peritoneal cavity, drains were inserted and the abdomen closed. The first postoperative day, 9/13/41, temperature rose to 106; patient's condition was grave. The second postoperative day the patient's condition continued to deteriorate and the patient became comatose, his pulse weak and thready, rising to 136; his respirations dropped to 8 per minute. In the afternoon of the day, 9/14/41, the patient was apparently moribund; UBI therapy was instituted. Twelve hours later patient's temperature began to drop, as well as his pulse rate. Respiratory rate rose to 18. Toxic symptoms began to subside. Twenty-four hours later patients toxic symptoms had begun to disappear and within 48
respirations were 16. The abdominal examination revealed marked rigidity with extreme tenderness in the right lower quadrant, slight distention, generalized tenderness and rigidity, with no audible peristalsis. His admission blood count was 14,500 leukocytes, 94 per cent neutrophils (70 per cent filament, 24 per cent non-filament). He received preoperative UBI, and was then immediately operated on under spinal anesthesia.

FIGURE 11

Patient S 90923. Male, 17, with generalized peritonitis secondary to perforating appendicitis. He received UBI therapy preoperatively on admission; appendectomy was done soon afterward. Detoxification was observed in the following 24 hours, the temperature falling by lysis. In view of the absence of evidence of incomplete drainage, a slight rise in temperature beginning on the twelfth postoperative day and persisting for four days was considered an indication for repetition of UBI; this was done on the seventeenth postoperative day. The temperature promptly fell to normal, and the patient was discharged four days later in good condition.
Patient H 37339. Male, 52, apparently moribund after prontosil failure. He was sent to the UBI clinic on the seventh postoperative day with marked cyanosis and dyspnea, generalized peritonitis secondary to perforating appendicitis, paralytic ileus of four and a half days' standing, lobar pneumonia and all associated toxic symptoms. A few minutes after the initial UBI, dyspnea and cyanosis disappeared and the patient appeared improved. Twelve hours later definite peristalsis was reestablished. However, at the end of 48 hours the patient's condition began to deteriorate again, and UBI was repeated. A slight detoxification effect was observed in the following 48 hours, but the patient's condition remained precarious. A third UBI was given, and within 24 hours the patient's toxic symptoms began to subside rapidly; his pulse and respiratory rates were approximately normal, and his mental confusion obviously had disappeared, although his temperature remained slightly elevated and did not fall until the peritoneal drain was removed. Except for a temporary slight temperature rise at the time of resuture of the abdominal wound, the patient convalesced uneventfully, leaving the hospital in apparently good condition thirty-six days after the initial UBI.
FIGURE 13 (a and b); continued next page
of the left buttock. On 10/7/41 this ruptured and her temperature fell to normal. Patient convalesced uneventfully from this point on and was discharged in good condition on 10/12/41. (See Figure 13.)

(7) Case 27, Table I (S 91684) (no associated Figure): 25 year-old woman; acute generalized peritonitis from perforation of appendix. Patient was admitted to the Shady Side Hospital 5/20/41, with a history of having inserted a catheter into her uterus one week before admission. She was presumably three-months pregnant at the time. Three days before admission she expelled large blood clots and what seemed to be a placenta. A few hours after this occurred she experienced severe crampy pain in the right lower quadrant. About 36 hours before admission pain subsided considerably but by the time of admission was increasing in severity. There were no vomiting, mild nausea, no chills. The admission diagnosis was incomplete septic abortion with salpingitis acute right. Admission temperature was 101.2, pulse 108; respirations were 24. Blood count showed 3,220,000 red cells, 8.8 gm. hemoglobin, 12,000 leukocytes, 74 per cent neutrophils (41 per cent filament, 33 per cent non-filament), sedimentation 7 mm. in one hour. Examination revealed no vaginal bleeding, extreme pelvic tenderness with a large mass to the right side palpable abnormally with the uterus fixed. Sulfathiazole therapy was instituted on 5/20/41, continued until 6/3/41. She persisted in septic temperature with peaks to 102, and was moderately toxic. She was operated on 5/27/41, a dilatation and curettage being done and the abscess drained through a right paramedian incision in the lower abdomen. A large amount of colon-odored pus was found, and leakage was widespread. The appendix had evidently disintegrated and could not be observed. The right tube was removed during this operation and drainage instituted. As mentioned, the sulfathiazole was continued until 6/3/41, at which time the patient was critically ill with temperature having reached 106.2 the evening of 6/2/41 and persisting near 106 degrees on 6/3/41 with pulse rate ranging up to 140. Blood cultures taken 5/30/41, 6/4/41, 6/6/41 were negative. On 6/4/41 UBI therapy was administered, followed the same afternoon by a 500 cc. blood transfusion. There was marked improvement as far as toxemia, temperature rise, pulse quality and rate might indicate, overnight. She continued this improvement over the next 48 hours. On 6/6/41 blood irradiation was again given because of the desperate nature of the illness and the feeling that the patient might relapse. The patient's condition began to improve rapidly in the following two days. Another 500 cc. transfusion was given on 6/10/41 and the patient continued to improve. The patient made a really remarkable recovery after this time, and was discharged in good condition on 6/29/41, the thirty-second postoperative day. At this time the wound was healed except for slightly serous drainage at the lower angle. The picture here was confusing from the start because of the abortion attempt. There was never any proof of septic endometritis. Presumably the entire pathology was caused by an acute appendix with perforation and abscess formation. In any case the infection was successfully controlled by UBI therapy after obvious and complete failure of sulfathiazole therapy.
Patient H 55762. Male, 34, with generalized peritonitis secondary to rupture of suppurating appendix. UBI therapy was given on the first postoperative day. Within 48 hours a subsidence of the classic symptoms of toxemia due to generalized peritonitis - namely, rapid, bounding pulse, rapid respirations, abdominal pain, distention and rigidity, Hippocratic facies, and irritability and apprehension - was clearly evident. The patient convalesced uneventfully thereafter, leaving the hospital in apparently excellent condition ten days after this single UBI.

**CLINICAL OBSERVATIONS**

We wish to state unequivocally that in the more than 6,000 UBI's administered during the four years in which this report was originally compiled, at the Shadyside Hospital in Pittsburgh and at the Hahnemann Hospital in Philadelphia, we have seen no deleterious
reappearance of normal intestinal smooth muscle tone was marked by the expulsion of large amounts of flatus, a marked reduction in abdominal distention, and normal auscultation findings of the abdomen, accompanied by a subsidence of other toxic symptoms. This dramatic abolition of paralytic or adynamic ileus has constituted one of the chief clinical observations made during the course of our work with UBI in peritonitis.

It has been our impression that the optimum time for the application of UBI in all cases of peritonitis is before operation. Certainly the sooner it is instituted, the better.

---

**FIGURE 16**

Patient H 55738. Girl, 11, with generalized peritonitis secondary to a ruptured appendix. She convalesced uneventfully after appendectomy, drainage, and UBI given the first postoperative day.
Patient S 71033. Male, 17, with generalized peritonitis secondary to appendicitis, marked plastic exudate being present. On the second postoperative day the patient's temperature began to rise, and in 48 hours his general condition deteriorated rapidly, marked toxic symptoms appearing. At this time UBI therapy was instituted, and within 24 hours the patient's toxic symptoms had subsided markedly and abdominal distention was lessened; 48 hours after UBI his condition was no longer critical. An uneventful convalescence ensued, the patient leaving the hospital seventeen days after UBI.
(3) The simultaneous bactericidal and detoxification effects of UBI are shown in tabular form in 72 consecutive or unselected cases of peritonitis.

(4) Because of the high frequency of occurrence of detoxification effect we have arbitrarily chosen a term "Detoxification Time" which we have defined as follows: the detoxification time is arbitrarily divided into two components, early and complete, which are defined respectively as: first, the time in hours which elapses between initial UBI and subsidence of toxic symptoms; second, the time in hours elapsing between initial UBI and a complete detoxification effect - i.e., that point at which it becomes clearly evident that the patient's condition is no longer precarious.

FIGURE 20

Patient H 57010. Male, 59, with generalized peritonitis secondary to acute gangrenous appendicitis. UBI was given on the day after appendectomy. Detoxification occurred in 72 hours, and the patient convalesced slowly but uneventfully.
(c) Pelvic, multiple pelvic abscesses - early, 54 hours; complete, 90 hours.

(6) The end result of UBI therapy in the control of infection in these three types of peritonitis has been found to be as follows:

(a) In 40 cases of generalized peritonitis, 32 patients recovered (100% of the moderately advanced, and 53% of the apparently moribund).

(b) In 20 cases of localized peritonitis with appendiceal abscess, 17 patients recovered (100% of the moderately advanced, and 57% of the apparently moribund).

(c) In 12 cases of pelvic peritonitis with multiple pelvic abscesses, 9 patients recovered (100% of the moderately advanced, and 57% of the apparently moribund).

(7) Twenty temperature graphs are shown to illustrate characteristic effects of UBI on the types of abnormally high temperatures encountered in the three types of peritonitis reported.

CONCLUSION

(1) The use of UBI has been found to be of definitely great value as a control of infection in peritonitis, generalized, localized, or pelvic.

(2) After UBI treatment we have witnessed repeatedly the most rapid and efficient detoxification yet known.

(3) Simultaneous production in a safe and efficient manner of bactericidal and detoxification effects by UBI is a most striking phenomenon, and one unique in the history of medicine.

DISCUSSION

(Dr. H.M. Eberhard, Philadelphia): At the Hahnemann Medical College and Hospital in Philadelphia, the Committee on Research is very exacting. Before any research report is released for publication it must be approved by the Committee.

In the investigation submitted by Dr. Miley today, the Committee postponed release a long time, until assured that the premises and conclusions warranted their stamp of approval.
It was difficult at times to draw a line of demarcation, since each method approached the other in many instances with similar results. One advantage which was very noticeable was the complete absence of reactions when irradiation was used. I have never seen a single reaction in an afebrile case. In generalized infection where nausea is the outstanding symptom, the patient did not have an aggravation, as often occurs with the

**FIGURE 23**

Patient S 84113. Male, 17, with generalized peritonitis secondary to acute gangrenous appendicitis. On the day following appendectomy and peritoneal drainage he was profoundly toxic with marked abdominal distention. UBI therapy was instituted, and within 48 hours the toxic symptoms began to subside, although the temperature remained elevated until the eighth postoperative day. Then, after the removal of the peritoneal drain, the temperature fell to normal, the patient convalescing uneventfully thereafter. He was discharged on the seventeenth postoperative day.
the normal as 12 to 15 volumes per cent, we found the inanition cases had as low as 2 to 5 volumes per cent. After several irradiations 6 of 8 cases gained as much as ten and fifteen pounds, with a corresponding increase in the oxygen-carrying capacity of the red cells.

I have witnessed the dramatic results in cases of puerperal sepsis, lobar and bronchopneumonia, etc.

In one case of proved undulant fever that had been refractory to the usual forms of therapy, no fever was noted after the first irradiation.

While we understand that one case is not sufficient to report, the unusual results in the case mentioned were so startling that Dr. Miley hopes to treat as many such cases as possible and make a complete report.

Substantially, the best results noticed by many when using UBI were in lobar pneumonia, bronchopneumonia, influenza and generalized infections. It has been helpful in most instances in surgical preparation, and especially in abdominal cases the patient was distinctly less disturbed and the convalescence uneventful.

In some cryptogenic temperatures where no causative factor could be detected it was found to be helpful.

Where habitus enteropticus existed with collateral weakness of the non-striated muscle system, many patients were benefited to an unusual degree.

In ulcerative colitis it has not given satisfactory results until after the colon was put to rest, preferably by a double-barreled colostomy.

I was much impressed in cases of hypoproteinemia, especially in those in which the albumin-globulin ratio was disturbed. In 15 cases the total proteins were increased and the albumin-globulin ratio balanced. It has been of no value in streptococcus-viridans endocarditis.

My experience with this therapeutic agent is such that I feel it warrants consideration and in many instances may be helpful when other means of therapy have failed.
5. Escherichia Coli (E. Coli) Infections, continued

(b) Pyelitis. Acute, subacute and chronic pyelitis respond extremely well to UBI. It has been a most satisfactory experience for all of us who have had the chance to use UBI in this disease entity.

Miley recorded the case of a woman, age 30, who had suffered from chronic pyelitis for 6 years, during which time severe strictures developed in both ureters and she required dilation of the ureters every 1 - 2 weeks at City Hospital outpatient clinic, New York. She began UBI therapy in 1946 and continued it up to 1954. At the time she began UBI, she had a low grade fever of 99° - 99.5° for many years. She received UBI every 2 weeks for about 3 months and seemed much better, requiring ureteral dilation every 3 - 4 weeks. For 2 more years she received UBI each month and by that time, i.e. 2 years later, needed ureteral dilation only every 3 months. By 1950 she was completely well, required no ureteral dilation, and went back to the outpatient clinic for yearly checkups of her urological status. When next heard of in 1956, her urologist, Spinelli, stated that he could not believe it, but that her ureters were apparently quite normal, as was her general and urological condition. In 1962, Armand Greg, a general surgeon, reported her condition excellent.

In a hidden acute pyelitis, occasionally treated as a fever of undetermined origin, one UBI in several instances was followed by a tremendous pyuria and a rapid subsidence of all toxic symptoms; apparently the powerful regulating effect of UBI in the autonomic nervous system plays a role in replacing ureteral malfunction with normal ureteral motility.

Also, in the fever charts shown previous to this, there may be seen an excellent example of how UBI controls septicemia due to pyelitis as well as the pyelitis itself.

(c) E. Coli Septicemia. In 1943 Rebbeck (7) reported that 5 of 7 apparently moribund patients suffering from E. Coli septicemia had recovered. In all 5 there was a rapid subsidence of toxic symptoms. He also stated that no harmful effects had ever been observed after 4,000 UBI treatments given at Shadyside Hospital, Pittsburgh. (Refer to Figures 26 and 27.)

Note to Figure 26, following page:

(Patient S 83857.) This is a rare example of double septicemia - one in which blood cultures were positive for both streptococcus hemolyticus and colon bacillus after second-stage prostatectomy. Three UBI's were given at 48 hour intervals. Forty-eight hours after the first UBI the blood cultures became temporarily negative; the streptococcus hemolyticus disappeared permanently. The colon bacillus, however, reappeared just before the third UBI, the patient's temperature rising to 106.8°. After the third UBI the patient's condition improved greatly. Therefore, although for a three day period beginning 72 hours after the third UBI, the blood cultures were positive for colon bacillus, no further
FIGURE 27

In this case of colon bacillus septicemia secondary to acute pyelitis, UBI was instituted after the patient had been in a coma for forty hours, her blood cultures had been positive for thirteen days, and her temperature had reached 108.4°. Forty-eight hours after initial UBI blood cultures became negative and the patient's toxic symptoms began to subside, and ninety-six hours later the patient was greatly improved, temperature falling to normal. A second UBI was given as a precautionary measure. The patient convalesced quite well, leaving the hospital in apparently excellent condition fifteen days after the initial UBI.
tetanus in the same hospital has rarely if ever exceeded 20% in the previous few years, due to the excellent supportive care given. In any case the use of UBI in tetanus is certainly justified. If all patients with tetanus do as well, following UBI, as the 2 mentioned, tetanus will no longer be rated a dangerous disease in institutions where UBI is available.

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H. RICKETTSIAS

1. Typhus Fever. UBI has been used by Miley in one case of typhus fever, as follows: the patient, a man of 34 living in the poorest circumstances in the Mexican quarter of Los Angeles, was admitted to the hospital with a fever of undetermined origin ranging between 101° F. and 105° F., chills, generalized aching and rapid pulse. After the first 24 hours of hospitalization, characteristic typhus spots appeared on his skin. Laboratory examinations revealed only a positive protein 0 X 19 agglutination. His general condition deteriorated hourly with increasing delirium. A diagram of typhus fever, date and fulminating, was made. UBI was given at this time and in 48 hours there occurred a slight subsidence of toxic symptoms, with the patient able to answer questions somewhat more rationally though the temperature remained between 103° F. and 105° F. A second UBI was given 72 hours after the first. In 48 hours following this, the patient very definitely improved with a rapid subsidence of toxic symptoms; the temperature fell to a level of 99° F. to 100° F. where it remained for 3 more days, finally coming to normal 5 days after the second UBI. Convalescence thereafter was uneventful.

It is difficult to say whether or not UBI favorably influenced the course of typhus fever in this case, chiefly because we know that a patient with typhus, especially in America, may recover rapidly after 2 to 3 weeks of marked prostration. On the other hand this patient very probably had the Mexican variety of typhus fever (tabardillo), became severely ill very rapidly, i.e. in 2 to 3 days, and apparently was afflicted with a malignant, fulminating form of typhus fever. Therefore, since the patient did recover, and did require two irradiations, whereas a self-limiting disease process rarely, if ever, requires more than one UBI, it is the authors' impression that in this particular case UBI definitely influenced the course of the disease in favor of the patient.

On thing is certain: UBI may well have helped this patient with typhus fever; it did no harm; and therefore in an intractable disease such as a rickettsial infection where no adequate treatment exists\(^1\), the rickettsial patient should be given the chance to have UBI therapy if possible.

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\(^1\) That is, at the time this section was originally written, circa 1964. -ed.
A. Asthma, Bronchial
B. Hay Fever
C. Drug Allergy
D. Serum Sickness
E. Urticaria
F. Erythema - Multiforme and Nodosum

A. ASTHMA, BRONCHIAL

The first report on the use of UBI in bronchial asthma was made by Miley, Seidel and Christensen in 1943 (1). Eighty consecutive cases were reviewed in which UBI was used as the chief therapeutic agent. The following excerpts from this classic paper are presented:

DIAGNOSTIC CRITERIA

The following characteristics were present in all the cases included in this report:

1. Recurrent attacks of wheezy dyspnea with intermittent periods of relief varying in degree and frequency.

2. A marked refractoriness to most standard types of treatment, as judged by the following criteria:

   (a) Failure to respond to removal of known aggravating extrinsic factors, e.g., dusts, pollens and foods.

   (b) Refractoriness to all desensitization efforts.

   (c) Refractoriness to bronchoscopy and bronchoscopic "drainage" with or without supplementary use of autogenous vaccine.
Our results with 80 patients suffering from intractable bronchial asthma have been extremely gratifying. They are summarized in the accompanying Table, and in addition, detailed reports of 3 cases are presented as follows.

**REPORT OF CASES**

**Case #4:** Mrs. A.S., aged 46, was first seen May 17, 1940 and was admitted to the Hahnemann Hospital at that time. She gave a history of intractable bronchial asthma and chronic sinusitis for the previous twenty-six years, unrelieved by desensitization attempts, bronchoscopy, vaccine therapy, various intranasal operations, cholecystectomy in 1939 and injections and inhalation of epinephrine and ephedrine products. Physical examination revealed constant and severe wheezy dyspnea, marked generalized cyanosis, and extreme weakness and debility; the patient was apprehensive and obviously suffering a severe psychoneurosis secondary to her ill health. Laboratory examinations gave essentially normal results with the exception of a leukocyte count of 12,100; eosinophilia was absent. A diagnosis of intrinsic bronchial asthma was made, and UBI therapy was administered the same day. That night the patient experienced an exacerbation of her asthmatic symptoms comparable to previous severe attacks. She was discharged from the hospital at the end of four days.

The patient was next seen June 18. She reported that she had several asthmatic attacks since the first UBI but stated that they were not so severe or so frequent as previously. UBI therapy was repeated at this time. The patient returned September 3. Her general condition was apparently improved. Her asthmatic attacks were less severe than in the first four weeks following the initial UBI, and she had gained 7 pounds. When she was next seen, on November 22, her general condition was fairly good, with her attacks steadily becoming less frequent and less severe.

UBI therapy was repeated on April 12, 1941, when the patient returned after a five month interval. Her condition was obviously greatly improved, her attacks were much reduced in number and severity and it was noted that cyanosis had practically disappeared. The therapy was repeated June 9, August 5, October 10 and November 25, 1941 and March 27, 1942. When last seen (April 27, 1942) the patient was having only one to three almost negligible attacks per month, her weight had risen from 102 to 122 pounds, and her general condition permitted her to do all the work for a household of six as contrasted with her complete invalidism when she was first seen.

**Case #7:** Mrs. M.M., aged 56, was first seen November 22, 1938. She gave a history of seventeen years of constant severe asthma attacks, with insomnia for the past six years. The best types of treatment had been employed, notably desensitization to house dust, the only known predisposing etiological factor, use of autogenous vaccine made from cultures of bronchial bacteria obtained by means of diathermy, the bronchoscope, sinus extirpation,
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**Summary of Cases**

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<td>X</td>
<td>No attacks</td>
<td>1/23/44</td>
<td>8</td>
<td>8</td>
<td>25-30 moderate attacks monthly</td>
<td>3</td>
<td>M. 31</td>
<td>64</td>
</tr>
<tr>
<td>X</td>
<td>No attacks</td>
<td>2/6/44</td>
<td>6</td>
<td>6</td>
<td>20-30 severe attacks monthly</td>
<td>3</td>
<td>F. 22</td>
<td>63</td>
</tr>
<tr>
<td>X</td>
<td>No attacks</td>
<td>2/6/44</td>
<td>6</td>
<td>6</td>
<td>25-30 moderate attacks monthly</td>
<td>4</td>
<td>F. 41</td>
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<td>5/4/44</td>
<td>3</td>
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<td>3</td>
<td>M. 43</td>
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<td>3/4/42</td>
<td>6</td>
<td>6</td>
<td>30-40 severe attacks monthly</td>
<td>5</td>
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<td>Frequent attacks, episodes rest</td>
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<td>56</td>
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<td>6</td>
<td>5-10 attacks monthly</td>
<td>2</td>
<td>F. 34</td>
<td>55</td>
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<td>5</td>
<td>F. 31</td>
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<td>8</td>
<td>8</td>
<td>30-40 attacks monthly</td>
<td>5</td>
<td>F. 27</td>
<td>53</td>
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<td>X</td>
<td>---</td>
<td>11/14/42</td>
<td>--</td>
<td>1</td>
<td>Occasional attacks seasonally</td>
<td>27</td>
<td>F. 65</td>
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**RESULT**

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<th>VATION</th>
<th>OBSER</th>
<th>MENT &amp; TREAT.</th>
<th>GIVEN</th>
<th># OF</th>
<th>DURATION (YRS)</th>
<th>1ST UBI</th>
<th>DATE OF</th>
<th># OF ASHTMA CASE</th>
<th>AGE</th>
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<td>VO)</td>
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Key to Table I

<table>
<thead>
<tr>
<th>KEY</th>
<th>SUMMARY</th>
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<tr>
<td>Greatly Improved</td>
<td>XXX</td>
</tr>
<tr>
<td>Moderately Improved</td>
<td>XX</td>
</tr>
<tr>
<td>Slightly Improved</td>
<td>X</td>
</tr>
<tr>
<td>Unimproved</td>
<td>0</td>
</tr>
<tr>
<td>Not Followed Up</td>
<td>N.F.</td>
</tr>
<tr>
<td>Not Followed Up (no improvement noted during short observation period)</td>
<td>N.F.O.</td>
</tr>
<tr>
<td>Not Followed Up (definite improvement noted during short observation period)</td>
<td>N.F.X.</td>
</tr>
<tr>
<td></td>
<td>(24 Not Followed Up)</td>
</tr>
</tbody>
</table>

NOTE: The greatly improved group only includes those patients in whom marked improvement has been maintained for more than one year; the moderately improved group, those maintaining definite improvement for more than 6 months, and the slightly improved group, those showing definite improvement of less than 6 months’ duration.

In a second paper published in 1946 (2), Miley, Seidel and Christensen confirmed the preliminary report published in 1943. By this time they had treated 160 bronchial asthma patients with UBI. The essential features of this follow-up confirmation report are as follows:
CHART I

Time of maintenance of improvement in 120 patients with apparently intractable bronchial asthma who received UBI therapy for six months to five years.

(b) Of the 19 patients between 18 and 30, 11 became relatively symptom-free, 5 definitely improved, 2 improved slightly, and 1 remained unimproved. In this group 16 (64.2%) showed striking improvement.

(c) Of the 26 patients between 30 and 40, 7 became relatively symptom-free, 8 improved definitely, 7 improved slightly, and 4 remained unimproved. Fifteen (58%) responded favorably to the Knott technique.
(d) Of the 37 patients between 40 and 60, 5 became relatively symptom-free, 15 improved definitely, 8 improved slightly, and 9 remained unimproved. Twenty (53.9%) were definitely aided.

(e) Of the 13 patients over 60, none became relatively symptom-free, 3 improved definitely, 9 improved slightly, and one remained unimproved.

3. Effects in Each of the Various Etiological Varieties of Bronchial Asthma: The effects in each of the various etiological varieties of bronchial asthma are shown in Chart III, an analysis of which reveals the following facts:

(a) Of the 34 patients with allergy to inhalants (pollen dust), 10 became relatively symptom-free, 15 improved definitely, 6 improved slightly, and 3 remained unimproved. Twenty-five (73%) responded favorably to the Knott technique.

(b) Of the 33 patients with an allergy to infection (sinusitis, bronchitis), 5 became relatively symptom-free, 11 improved definitely, 9 improved slightly, and 8 remained unimproved. Sixteen (48.5%) showed striking improvement.

(c) Of the 3 patients with an allergy to foods, 2 improved definitely and one improved slightly. In this group, then, 66.6% were definitely aided.

(d) Of the 50 patients with intrinsic and miscellaneous allergies, 24 became symptom-free, 10 improved definitely, 11 improved slightly, 5 remained unimproved. Thirty-four (68%) can be considered definitely improved.

4. The Over-All Picture; Composite Results: The composite effect is illustrated in Chart IV, an analysis of which shows that of 120 asthmatic patients of various ages and with various etiological factors, 39 became relatively symptom-free, 38 improved definitely, 27 improved slightly, and 16 remained unimproved. In the group as a whole, 64.1% showed marked improvement, whereas the treatment of 13.4% can be considered a failure.

**CLINICAL OBSERVATIONS**

1. In approximately 50% of these patients a moderately severe asthmatic attack occurred during the first night after the initial UBI. Patients with an obviously advanced type of bronchial asthma were most often affected. Attacks occurred infrequently after subsequent UBI’s and were always mild.

2. Marked relief in the frequency and severity of the dyspneic attacks was noted after the second or third UBI, given at an interval of two to six weeks after the initial treatment.
served. Many patients who had been under constant treatment were enabled to lead apparently normal, useful lives with little or no discomfort.

7. A six months withdrawal of UBI therapy after one and two years' use, respectively, in 2 cases resulted in a definite recurrence of moderately severe attacks of wheezy dyspnea. After UBI was repeated the symptoms once again subsided, though apparently more slowly than they had originally.

8. The use of ephedrine or epinephrine inhalants was necessary only rarely for the 77 patients in the improved group after the first 3 or 4 months of UBI therapy.
of patients suffering from apparently intractable bronchial asthma after the application of this method.

2. UBI therapy must be repeated at intervals of 2 to 8 weeks in cases of advanced asthmatic disease.

3. Six to 10 months of treatment may be necessary before obvious improvement is noted.

4. Patients with advanced severe, apparently intractable bronchial asthma cannot expect permanent alleviation of symptoms but often can be consistently relieved under constant treatment.

5. Patients with early, apparently intractable bronchial asthma respond more rapidly and maintain their improvement for longer periods than do those in an advanced stage.

6. The management of apparently intractable bronchial asthma requires, in addition to UBI therapy, adherence to certain fundamental principles; e.g. elimination of predisposing aggravating influences, avoidance of instrumentation and nasal operations, and temporary use of epinephrine inhalants.

7. Autumnal aggravation of asthmatic symptoms occurred in approximately 30% of all patients under treatment, but was purely temporary.

8. Children and young adults respond especially well to this type of therapy.

9. The Knott technique has been found to be a safe and efficient method of controlling apparently intractable bronchial asthma, with 77 of 120 patients (64.1%) who received constant treatment and observation showing and maintaining definite improvement.

B. HAY FEVER

During the study of bronchial asthma, patients and their response to UBI, it was noted that in many instances hay fever disappeared also, following the use of UBI. Furthermore, over 50 consecutive patients with hay fever were also given UBI with the following general results:

1. Approximately 1/3 of hay fever patients were completely relieved of all symptoms and eventually needed no further UBI's.

2. About 1/3 of the hay fever patients were relieved of symptoms during the season, but required further UBI each year. These patients later required only 1 or 2 UBI's per year and often none.
disappearance of the bulbous lesions.

2. **Erythema Nodosum**: In this type of erythema it is necessary, as in all allergic diseases, to remove the cause if one can be found. Again, however, in many individuals in which no definite etiology was discovered, UBI was followed by a rapid subsidence of the painful and distressing symptoms of the disease process.
DISEASES DUE TO PHYSICAL OR CHEMICAL AGENTS

A. High Altitude Sickness
B. Radiation Injury, Sickness

A. HIGH ALTITUDE SICKNESS

In Chapter 3 we have already mentioned use of UBI in modifying bend susceptibility and the anoxic response by Davidson at the Seattle Navy Air Station. UBI was followed by a very definite decrease in bend susceptibility and an equally definite increase in the arterial saturation (anoxic response), in carefully-controlled experiments with humans in the low pressure chamber. UBI is, in our opinion, indicated in high altitude sickness.

B. RADIATION INJURY, SICKNESS

Hancock in 1950 (1) first described the beneficial effects observed following UBI in several individuals suffering from severe radiation injury due to large doses of radiation therapy.

From this report four cases histories and Hancock's opinion are presented as follows:

1. Mrs. R.P., 62 years of age (1950):

In 1934 the patient (then 53 years of age) was given two radium treatments and later operated for the removal of the cervix, ovaries, uterus and fallopian tubes. A malignant tumor approximately 2 cm X 1.5 cm hung out of the uterus on a thread of tissue at the time of the operation.

Radium treatments had resulted in ulceration of the rectum. The patient had been under treatment by a proctologist for two years without relief. When she consulted me, the ulceration had been present approximately six years and elimination was extremely difficult.

UBI was first administered January, 1941. Five weeks following treatment, examination
right index finger. The lesion, on examination, showed a hornyl, scaly growth with gross thickening of the skin. Movement of the finger produced irritating and painful fissures in the skin where creases formed when the finger was flexed. For several years there had been numbness and a loss of sensitivity in the affected finger. The patient had consulted a skin specialist and had been advised that plastic surgery with skin grafting offered the only hope for relief of a permanent nature.

He was given the first UBI treatment in January, 1950, and received a total of four approximately one month apart. Three weeks after the first UBI, the fissures in the creases of the finger had healed and the horny growth diminished. Sensation improved about one-third following the second UBI. Improvement continued steadily and when last seen in June, 1950 (6 months after the first UBI) the thickening of the skin had decreased to a point where it was not readily discernible. The fissures were healed and the horny growths reduced to minute scaly areas. Sensation had improved to approximately 80% of normal. In my opinion, progress had been so satisfactory that surgery would be avoided and the finger would return to normal.

Stated Dr. Hancock:

"The successful termination of the above cases is typical of others I have treated thus far. The success or failure of treatment, however, can be determined only by a careful follow-up period of a number of years after treatment to ascertain whether or not the relief achieved was maintained.

It has been observed that the healing process generally covered a period of from four to six weeks. More frequent irradiations might have shortened the time factor, but it was felt at the time the progress was so satisfactory that more rapid healing could scarcely be expected."

It is the authors' belief that UBI is of great value in radiation injuries. In radiation sickness it is our opinion that UBI will shorten greatly the length of time of the disease process after heavy general irradiation with X-ray, and probably many variations found following exposure to atomic energy, as after nuclear bomb explosions.
DISEASES OF METABOLISM

A. Gout, Gouty Arthritis
B. Diabetes Mellitus
C. Spontaneous Hypoglycemia
D. Hyperthyroidism
E. Addison's Disease

A. GOUT, GOUTY ARTHRITIS

In the several cases of gout and gouty arthritis in which UBI was used by Miley, no lasting beneficial effects were observed. In these individuals UBI was used at various intervals, from a few days to weeks and over a period of several months; however, no definite influence could be noted, either good or bad. Consequently this type of metabolic disease must be considered as resistant to UBI.

B. DIABETES MELLITUS

A rapid fall in blood sugar levels following UBI in diabetes was observed by many workers and was first mentioned by Miley in 1951 at the annual ABIS\(^1\) meeting. The finding was made incidentally while using UBI in patients with failing circulation in the feet and legs with early and advanced signs of gangrene.

Olney observed that diabetic gangrene in some instances could be controlled, and recurrences prevented, by continued use of UBI over a period of several years. He was able to save several patients from amputation by the use of UBI. This has been the experience of all UBI workers who have repeatedly used this method in diabetics.

Miley was able to control without insulin and with UBI, the blood sugar level of one diabetic patient for about 18 months. In this case, the blood sugar fell from levels of 350 - 400 mg.

\(^{1\text{American Blood Irradiation Society, now defunct. -ed.}}\)
following UBI in severe cases of thyrotoxicosis.

Furthermore, UBI apparently can control thyrotoxicosis *per se* and maintain such patients in good health for long periods of time, avoiding thyroidectomy, unless the size of thyroid demands extirpation.

This effect of UBI is most valuable and should be used generally, wherever severe thyrotoxicosis exists.

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**E. ADDISON'S DISEASE**

The only patient with Addison's disease ever treated by UBI\(^1\) was a patient of Miley's in 1939. The patient, a woman of 31, had completed a successful pregnancy (unusual in Addison's disease), during which she had received large doses, empirically, of adrenal cortex extract. Despite the latter, she continued her downhill course, and UBI was used. Following a single UBI, the extreme dark pigmentation of the skin began to clear up in a few hours. This effect lasted for several days and the patient stated she felt much better. However, it was decided by her physicians to implant desoxycorticosterone acetate pellets under the skin and to discontinue UBI (to which procedure the patient objected for unclear reasons). Within a year this corticosteroid failed to help and the patient died.

This experience is mentioned as an obviously fragmentary finding, for what it may be worth.

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\(^1\) i.e., at the time this chapter was written, circa 1964.
DISEASES OF THE MOUTH

A. Stomatitis
B. Gingivitis
C. Glossitis

A. STOMATITIS

1. Aphthous Stomatitis: In several individuals who received UBI over a long period of time, for various other disease processes (e.g., bronchial asthma, rheumatoid arthritis, etc) it was noted that the aphthous stomatitis gradually disappeared; first it occurred much less frequently and in less severe form, until finally it would disappear.

2. Vincent's Angina: In the years before penicillin, Vincent's angina could be a very severe and debilitating disease. In several such cases UBI was found to control the disease process very well.

B. GINGIVITIS

UBI was used by Miley in one individual with a Vincent's infection of the gums that had proved resistant to penicillin. The dentist in charge stated that after 2 UBI's the patient's gingivitis had cleared completely.

It has been noticed years that some individuals with chronic gingivitis, who received UBI for other reasons, stated that they had noticed great improvement in their gums after prolonged UBI therapy. This voluntary information was noted, though no great conclusions were drawn from it.
PEPTIC ULCER

A. Gastric Ulcer
B. Duodenal Ulcer

The use of UBI in peptic ulcer has been combined with various other treatments and only Rebbeck\(^1\) reported its use alone in a limited number of cases. However, Rebbeck felt that there was a rapid and definite healing of both gastric and duodenal ulcer, much more so than might be expected with diet alone.

A. GASTRIC ULCER

Surgery (partial or total gastrectomy) has been the most successful type of treatment of gastric ulcer in general use today, in our opinion\(^2\). Nevertheless, since Rebbeck was a very accurate observer of the effects of UBI in a wide variety of disease processes, his results cannot be disregarded. He found that a rapid disappearance of X-ray signs and clinical symptoms of gastric ulcer following a few UBI's (3 - 6), occurred in 6 to 8 weeks.

Therefore, it is our opinion that, before gastrectomy is used, the patient with gastric ulcer should have a series of UBI's over a period of 2 to 3 months to see whether or not UBI has or has not favorably influenced the handling of the gastric ulcer. If so, UBI should be continued over a period of one to two years.

B. DUODENAL ULCER

The many and varied attempts to induce healing of a duodenal ulcer, including freezing, gastrectomy, posterior gastroenterostomy, vagotomy, etc. have not been a complete success. No one of these procedures can be relied upon consistently to eliminate a

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\(^1\) In personal correspondence.

\(^2\) I.e., circa 1964, when this chapter was written.
We have had occasion to use UBI many times in inflammatory processes of the intestines. Obviously there are many pitfalls in the diagnosis, not only of the inflammatory process and the part of the intestine involved, but also in the extent to which the disease process has advanced, with resultant damages of a permanent or semi-permanent nature. A large part of these conditions can be verified only at operation. The correlation between pre-operative diagnosis, the use of UBI, and operative findings is obviously at best a difficult procedure. Nevertheless certain general findings have been noted by those of us who have had occasion to observe over the years, the use of UBI in acute duodenitis, acute appendicitis, regional ileitis and ulcerative colitis.

A. ACUTE DUODENITIS, GASTRODUODENITIS

During the years 1938 - 1947 a number of patients were sent by Dr. H.M. Eberhard and associates from the gastro-enterology department at Hahnemann Hospital, Philadelphia, to the blood irradiation clinic (Miley), with the diagnosis of acute duodenitis; usually these individuals had apparent epigastric and duodenal pain and occasionally low-grade fever, plus X-ray evidence of hyperirritability of the duodenum without evidence of ulcer formation either in the stomach or duodenum. Frequently an associated spasm of the sphincter of Oddi was involved, with clinical signs of increased intraductal (biliary) pressure.

Most of these patients had good dietary treatment, plus non-surgical gall bladder drainage, i.e. usually olive oil installation by duodenal tube, with aspiration of subsequent bile flowing into the duodenum, due to the relaxation of the sphincter of Oddi and the general cholangue effect. This treatment had been considered generally effective, but in some instances a marked inflammatory phase had persisted, with the clinical signs of acute duodenitis or gastroduodenitis unrelieved. In this latter group UBI was used with varying results as follows:
3. In patients with frequent previous attacks of appendicitis, the result of using UBI does not follow the pattern as in the case described above. Olney states that, in several instances after the use of UBI in patients with advanced acute appendicitis with the possibility of rupture already existent, or in those with recurrent attacks, the acute clinical symptoms may subside; however, after a period of days or weeks such patients may complain of general malaise, low-grade fever and recurrent dull abdominal pain. On operation an appendiceal abscess was found in several such patients, and only after its evacuation did persistent symptoms and signs disappear.

Therefore, if there is any question about the persistence of appendiceal symptoms and signs, operative intervention should be used.

4. In acute appendicitis with a ruptured appendix and generalized peritonitis, the reader is referred to the section on peritonitis in Chapter 5, Section E-5, in which Miley and Rebbeck's comprehensive report is given. This report, written before the advent of modern antibiotics, shows the great value of UBI in peritonitis, and complications following a ruptured appendix, in cooperation with good surgical treatment.

5. Similarly, in acute appendicitis and appendiceal abscess formation, one may refer to this same report, where Miley and Rebbeck state their opinion that UBI has been of great value in controlling this syndrome and the complications frequently encountered therein.

Finally it must be stated unequivocally that the intelligent use of surgery combined with UBI has been found to control safely and efficiently acute appendicitis and its several common complications. In several instances an apparent early appendicitis, with classical findings, has subsided within a few hours following UBI and in such cases surgery was avoided. Some individuals never had another attack; others had recurrent symptoms and needed operation for removal of the appendix. In any case, none of us believe that UBI is a substitute for intelligent surgical judgement.

It must be emphasized here that antibiotics were found to be completely unnecessary when UBI was used.

C. REGIONAL ILEITIS

In view of the above observations it is our opinion that, in a condition such as regional ileitis, UBI may be used several times for a few weeks, if no acute surgical emergency exists or appears. If the patient undergoes a rapid improvement in all signs and symptoms, including a change toward normal of the X-ray findings (as has happened occasionally), then UBI should be continued. If, on the other hand, the patient's clinical course is unchanged, or continues to deteriorate (as has also happened), then obviously surgical removal of the diseased portion of the ileum is indicated.
DISEASES OF THE GALLBLADDER, BILE DUCTS, PANCREAS, LIVER

A. Cholecystitis
B. Cholelithiasis
C. Cholangitis
D. Acute Pancreatitis
E. Chronic Pancreatitis

As might be expected, UBI has been used in the various inflammatory diseases that afflict the gallbladder, bile ducts, pancreas and liver. It has been used pre-operatively and post-operatively in surgery of the gallbladder and bile ducts with excellent results.

In 1946 Olney (1) reported his results in the use of UBI in 383 patients with a wide variety of non-malignant biliary diseases. His experience has been the most extensive in this field, and in the eighteen years since publication of this report(1), he has had a great deal more confirmatory evidence of the conclusions arrived at in his original report.

A. CHOLECYSTITIS

1. Acute Cholecystitis. Olney described the effects of UBI in eight severely ill patients suffering from acute cholecystitis, three of them apparently moribund. In two of the latter three, the findings were almost identical: one patient was aged 78 years, the other 80; the leukocyte counts were 30,000 and 35,000, respectively; both were semi-comatose, markedly jaundiced, had rapid pulse rates and a large rigid tender mass in the upper right quadrant of the abdomen. Both had been sent to the hospital after all other methods of treatment had failed; the prognosis was grave to hopeless at this time. Following UBI (the only therapy used, as usual in this series of cases), both responded strikingly and in three to four days were eating normally, the white counts fell to normal, all swelling and tenderness had disappeared. They were discharged 14 and 18 days after initial UBI.

1 That is, at time of original publication (circa 1964).
everyone's astonishment, no stones could be observed in either patient. This upset the
surgeon somewhat, but not the referring internist. It must be mentioned that these findings
were the exception, not the rule.

C. CHOLANGITIS

In his paper, Olney reported his results with the use of UBI in 55 cases of chronic
cholangitis and hepatitis; in all cases the gallbladder had been removed previously, but
the patients continued to have recurrent attacks of jaundice, gas, upper right abdominal
and epigastric pain. In this group of patients a persistent cholangitis had been impossible
to control until UBI was instituted.

In 46 patients there was a marked relief of symptoms persisting from four months to a year
and one-half; in the remaining nine there was at first moderate relief, but some patients did
not return for follow-up treatment and nothing more was heard from them.

The results: 46 greatly improved; 9 doubtful, or not known.

The results of other UBI practitioners, although limited in the number of patients treated,
tend to support Olney's summary and conclusion that UBI reduces infections and
inflammatory process in general, specifically in non-malignant inflammatory processes in
the biliary tract. One outstanding fact is that Olney, a surgeon, using UBI was able to save
a large number of biliary tract disease patients from surgery of the gallbladder and
common duct due to the rapid return of normal of both, despite infection and inflammation,
following UBI.

D. ACUTE PanCREATITIS

This acute inflammatory disease of the pancreas is usually caused by biliary tract disease
and/or spasm of the sphincter of Oddi, characterized clinically by two stages: the early
acute edematous (interstitial), and the later acute necrosing type with symptoms of
epigastric pain, radiating to the back and/or lower abdomen, increasing in intensity, with
shock and death frequent in the advancing necrosing type. Blood serum amylase and
lipase values go up rapidly and allow earlier diagnosis, which is of extreme importance for
early treatment with a method capable of controlling the disease.

UBI has been used successfully in a number of cases of acute pancreatitis and certainly
is the treatment of choice in the opinion of the authors. There is a rapid subsidence of the
toxic symptoms as well as of the pancreatic and frequently-associated biliary tract
inflammatory process, with probable relaxation of the sphincter of Oddi (regulatory effect
13

DISEASES OF THE RESPIRATORY SYSTEM

A. Accessory Nasal Sinusitis
B. Acute Laryngitis
C. Bronchitis
D. Bronchiectasis
E. Pulmonary Edema
F. Emphysema
G. Lung Abscess
H. Pneumonia

A. ACCESSORY NASAL SINUSITIS

In 1946 Miley, Seidel and Christensen (1) published a report on the use of UBI therapy in 160 consecutive cases of bronchial asthma¹ in which 33 of the cases were believed to be due to an allergy to the infectious agents producing an associated sinusitis and/or bronchitis. As a result of this work, the effects of UBI in accessory nasal sinusitis and bronchitis were closely observed. In the case of the former the following was noted:

1. UBI helped greatly to eliminate sinusitis, acute, subacute, or chronic.

2. Nevertheless, exposure to cold damp air had to be kept to a minimum, and avoided entirely at night.

3. Dietary measures, i.e., low salt, no coffee and high vitamin and mineral intake, were important. No smoking was allowed.

4. In two cases, operative treatment of infected sphenoidal and ethmoidal sinuses was necessary to allow drainage and to remove foci of infection.

It is our belief that UBI is a tremendous help to the physician in the treatment of accessory

¹ Refer Chapter 6, Section A.
effect of UBI was a reduction in the inflammatory process, resulting in relief of the obstructive symptoms. Patients with not too much permanent damage recovered routinely and rarely, if ever, progressed to bronchiectasis and/or chronic emphysema.

It is our opinion that the earlier UBI is used in chronic bronchitis, the less will be the unpleasant sequelae, and the more satisfactory will be the results.

D. BRONCHIECTASIS

Again, in bronchiectasis, if UBI is used when the disease process is chiefly inflammatory with only minimal destruction, the results are good. In the advanced cases of bronchiectasis, Miley noted that symptomatic relief occurred in some patients who took UBI treatments every two weeks. Nevertheless, UBI cannot be considered as an efficient or adequate control of bronchiectasis, especially when surgical resection of the affected lobules or pulmonary segments has been so successful.

Pre-operatively, UBI plus postural drainage is a wise procedure, as the resistance of the patient is increased, and the inflammatory phase of the disease is greatly decreased.

E. PULMONARY EDEMA

Where pulmonary edema is due to left-sided cardiac insufficiency, UBI is not indicated. Where it is due to an uncontrolled lobar or advancing bronchial pneumonia, UBI has been and will be of life-saving value.

Again, the earlier UBI is used in pneumonia, bacterial or viral, the less likely is a pneumonia patient to develop pulmonary edema or other complications.

F. EMPHYSEMA

In the acute vesicular emphysema occasionally seen in the acute crisis of bronchial asthma patients with severe bronchospasm, the relief of the bronchospasm following UBI is often quite striking and a concomitant relief of the acute vesicular emphysema.

In the chronic type of diffuse emphysema UBI has been used, by Miley, over long periods of time in a limited number of patients. Where a relief of the inflammatory phase can help the generalized emphysema, a fairly good result can be obtained, followed by a slow recovery to a limited extent. Subjectively, the patients frequently state that they breathe much better while under UBI treatment, have less cough and attacks of dyspnea. If there is an associated bronchitis and/or sinusitis, and these both improve markedly after UBI.
pneumococcus, streptococcus (2), as well as primary atypical pneumonia, of a virus or virus-like nature (3).

Anyone who has seen the rapid clearing of cyanosis (a few minutes to an hour), in a severely ill patient with advanced lobar or bronchial pneumonia, will never doubt the efficacy of UBI. Regardless of whether the pneumonia is of bacterial or viral origin, the patient will usually recover rapidly. Only in those patients with extensive malignant tumor metastases will UBI be only a temporary relief. In over 95% of pneumonia patients treated, UBI has proved a safe and efficient method of controlling the disease. Usually two UBI's are sufficient. No other medication is necessary, nor is oxygen necessary after the first UBI except in rare instances.

The authors of this book would choose UBI without hesitation as the procedure of choice, should any of them or their families have pneumonia. In their opinion, UBI is the safest and most efficient method of treating this disease regardless of causative organism.
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DISEASES OF THE KIDNEY

A. Glomerulonephritis
B. Arteriolar Nephrosclerosis
C. Urinary Suppression
D. The Nephrotic Syndrome
E. Uremia
F. Toxemia of Pregnancy
G. Pyelitis

A. GLOMERULONEPHRITIS

1. Acute Glomerulonephritis: Acute glomerulonephritis has been treated with UBI by both Olney and Miley in a limited number of cases.

As we have mentioned in previous chapters, UBI effectively controls streptococcus infections, rapidly diminishing untoward inflammatory reactions, has a detoxification and anti-allergenic effect. This should be an ideal method for the treatment of acute glomerulonephritis, and generally speaking, it is. However, unless the acute glomerulonephritis patient is treated over a period of one to two years, frequently and regularly, the patient may relapse and the disease become chronic. This was found out the hard way; i.e., when patients responded well after three or four UBI's, they often stopped going for treatment; when recurrence of the glomerulonephritis occurred, UBI was invariably blamed for not controlling the disease. Miley noted in one girl, aged 8, that after such a recurrence, the girl was taken to an outstanding medical center where sulfa drugs were given, followed by a rapid downhill course and death. Olney observed similarly the discontinuation of UBI in a girl of 10 with acute to subacute glomerulonephritis, the clinical course of which had been improving under UBI over a period of several weeks. The result of this discontinuation was also death, within a year.

However, Olney observed several patients with acute glomerulonephritis who received UBI for more than one year, resulting in gradual improvement persisting for several years with no sign of relapse.
It is Miley's opinion that UBI is of little or no value in advanced arteriolar nephrosclerosis.

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C. URINARY SUPPRESSION

Coincidental with the large number of operative patients given UBI for one reason or another, it was observed by several practitioners, including Rebbeck, Olney, Hancock, Lewis and Miley, that a concomitant anuria almost invariably disappeared within 30 minutes to an hour (often less) following a single UBI. This has been attributed to the powerful normalizing effect of UBI on the autonomic nervous system.

This effect of UBI, the abolition of non-obstructive, reflex anuria, often in a few minutes, has been observed consistently and is quite dramatic, as are many other striking clinical findings noted following UBI.

Similarly, in patients with non-obstructive oliguria, an increase to normal of urinary flow has been observed to occur consistently, even where an ascending pyelonephritis was found to be the primary cause of the oliguria.

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D. THE NEPHROTIC SYNDROME

In the nephrotic syndrome of diffuse proteinuria, hypoalbuminemia, hyperlipemia and peripheral edema, UBI has been used by several practitioners, notably Rebbeck, Olney and Miley.

The response to UBI has varied widely with some patients recovering rapidly and others continuing their downhill course to uremia and death.

Apparently, some patients with the nephrotic syndrome recover after UBI despite appearance of having an irreversible disease process. In these individuals at least two years or more of constant treatment was used. Other patients, failing to respond to UBI, have had irreversible lesions of the kidney, e.g. glomerular and tubular destruction on a wide-spread scale.

In any case UBI should be used in this syndrome, as in acute and chronic glomerulonephritis, because of its known physiological and biochemical effects in patients whose nephrotic syndrome is not due to a total or near total loss of kidney structure. It can never injure the patient and often is the difference between life and death in patients observed for this study.
given and, as the blood was being returned, convulsions began to diminish in frequency and severity, ceasing entirely before the injection of intravenous UV was completed. A few tremors occurred 48 hours later, but ceased immediately after a second UBI. The patient recovered uneventfully.

A few weeks later a second patient, with a fulminating pre-partum eclampsia, some edema, unconsciousness, and no prenatal cause of any kind, was brought into Hahnemann Hospital, Philadelphia, given magnesium sulfate and rushed to the UBI clinic. UBI failed to produce any effect whatsoever and the patient expired the following day, despite UBI and all other measures.

There has been little or no use of UBI in eclampsia to the authors' knowledge other than the two cases mentioned. Possibly, with chlorothiazide and hydralazine, in addition to the old Amytal Sodium, magnesium chloride routine, as well as adequate pre-natal care, one does not worry about eclampsia anymore. Miley feels that if these all fail, UBI can be tried, because of its detoxification effect.

G. PYELITIS

Miley observed the effects of UBI in two unusual cases of pyelitis, one of an acute, hidden pyelitis with a very severe toxemia and high fever; and a second of chronic pyelitis of many years' standing with severe strictures of both ureters.

In the first case the patient, a woman of 68, had become severely ill, suddenly with a fever of 106°, chill and severe general malaise. A high leucocyte count was found on laboratory examination and little else, on physical examination. As her condition became critical, UBI was requested by her son (Miley) and was given by Madey. A few hours later her temperature dropped to 100 and the urinalysis, previously negative, showed large quantities of pus cells and colon bacilli. A second UBI was followed by complete recovery.

The attending urologist felt that a hidden pyelitis was the correct diagnosis, and that he had suspected it previously, but had feared to do a cystoscopic exam and catheterization of the ureters because of the gravity of the patient's condition.

The second case, that of chronic pyelitis, has already been described elsewhere, of a woman in her thirties who required weekly catheterization of strictured ureters to maintain an adequate output of urine; her diagnosis was chronic, intractable pyelitis; UBI given 6-10 times a year for three years was followed by a cessation of the pyelitis and a re-establishment of normal ureteral peristalsis. When examined five and eight years later by her urologist, Spinelli, she was found to have recovered completely from her pyelitis, and to have normally functioning ureters.
1. Macrocystic or "Pernicious" Anemia and Subacute Combined Sclerosis: In 1938, long before Vitamin B₁₂ or cyanocobalamin was in use, Miley noted the following in a woman of 32 with pernicious anemia and chronic rheumatoid arthritis:

The patient, despite adequate intake of liver and other dietary requirements in vogue in 1938, plus crude liver injections, had begun to develop muscular weakness and spasm, far out of proportion to the chronic rheumatoid arthritis. At times she was not able to walk more than a few moments. A diagnosis of beginning subacute combined sclerosis was made. UBI was started, at weekly intervals for four weeks and then bi-weekly. The muscular weakness and spasm began to disappear after a few weeks and her general condition improved strikingly so that at the end of six months she was considered so much better that it was decided to continue UBI and take her off liver and other dietary requirements, to see whether or not pernicious anemia could be controlled by UBI alone. This did not work at all, and her anemia became much worse in two weeks, so this idea was quickly abandoned, and liver et al. was given again. She improved immediately and continued to take UBI 4 - 6 times yearly over a period of 5 - 6 years. At one time she discontinued UBI for almost a year, at the end of which time she developed signs of muscular weakness and spasm again. Following two UBI's in two weeks she began to improve rapidly again, and was maintained until 1944 in excellent condition on diet plus UBI (every three months). When Vitamin B₁₂ became available, she changed to that and was seen no
Again we must ask: why did UBI have any effect? It seems likely to us that UBI supplied a missing energy factor sufficient to promote formation of antihemophilic globulin (AHG), a normalizing effect, poorly understood but quite powerful in its own way.

D. PURPURA

Since UBI can be relied upon to control so many diseases due to bacterial and viral infections, e.g. pneumonia, septicemia, measles and encephalitis, purpura has never been found following the use of UBI. The secondary purpura occasionally encountered despite other forms of treatment, e.g. antibiotics, simply do not appear in UBI-treated patients.

In the few cases of severe infection accompanied by purpuric manifestation, where UBI was instituted as a last resort, the efficient control of the disease process was followed by a remission of the secondary purpura, even in fulminating cases.

As for the effect of UBI in idiopathic thrombocytopenic purpura, no pertinent observations have been made to date.

In general one may say that UBI can be used safely in patients with purpura, even of the fulminating variety as rapid recovery of patients with purpura, secondary to infection, often obscure in nature, will prove a pleasant surprise to the user of UBI. As soon as laboratory tests are complete for diagnosis, UBI should be instituted immediately, before further damage is done, in patients suffering from severe purpura.

E. AGRANULOCYTIC ANGINA

Before the advent of penicillin and other antibiotics, UBI was used unwittingly in a number of patients with severe bacterial or viral infections, ulcerations of the mucous membranes, and leukopenia with partial or complete agranulocytosis. Almost invariably within 48 - 72 hours, as the patient's infection came under control the blood picture began to normalize, agranulocytosis disappeared, and leukopenia rapidly became leucocytes, with a gradual return to normal of all blood elements, as the clinical improvement became complete.

In severe agranulocytosis and infections, UBI is definitely indicated.

F. LEUKEMIA

Miley noted no beneficial effects of UBI in acute cases of leukemia, whether lymphocytic, granulocytic or monocytic in nature. Neither did he see any effects, good or bad in
DISEASES OF THE CARDIOVASCULAR SYSTEM

A. Diseases of the Heart:
   (1) Rheumatic Heart Disease; (2) Endocarditis; (3) Coronary Artery Disease / Congestive Heart Failure; (4) Angina Pectoris

B. Neurocirculatory Asthenia
C. Peripheral Vascular Diseases:
   (1) Peripheral Arteriosclerosis / Gangrene; (2) Thromboangiitis Obliterans; (3) Raynaud’s Disease; (4) Frostbite; (5) Varicose Veins / Varicose Ulcer; (6) Thrombophlebitis; (7) Lymphangitis

D. Arterial Hypertension
E. Arterial Hypotension
F. Shock

A. DISEASES OF THE HEART

1. Rheumatic Heart Disease: The work of Wasson, Miley and Dunning in rheumatic fever (120 cases) has already been described in detail in Chapter 5. It was found that UBI controlled rheumatic fever at all stages of the disease and that rheumatic heart disease could be prevented by UBI.

Acute rheumatic carditis was rapidly eliminated by UBI, and did not recur. In many cases, though not all, where a chronic rheumatic valvular process was involved, the lesion gradually disappeared, the damage being more apparent than real.

It is our opinion that UBI given pre-operatively in patients with a rheumatic fever history and requiring valve surgery would be quite valuable. At least, one would not have to worry about a sudden recurrence of rheumatic fever, and one would be sure the patient would be in optimum condition for heart surgery.
The best time to begin treatment is within a few hours or at least within 24 hours of the initial attack, and then treatment should be given adequately to control the symptoms and condition over a period of about eight weeks; following this, for a period of time as is indicated in each case.

In acute coronary occlusion there is always the area of heart muscle from which the circulation has been shut off, and an area of ischemia around this. There is, of course, a marked inflammatory reaction with swelling and edema, as a result of the occlusion. It has been our reasoning that in any acute condition of this type UBI is of distinct value in reducing the inflammatory reaction and improving the circulation in the disturbed heart muscle. From the practical standpoint, clinically, this appears to be exactly what happens. There is marked improvement in the patient's condition with relief of pain beyond the opiates which previously may have been given, and frequently less pain medications are thenceforth required. The following case illustrates this condition clearly:

On January 17, 1957, F.R. (female) was seen at the office with pain in the precordial region and with pain radiating down both arms and marked distress in the epigastrium. A diagnosis of coronary insufficiency was made, and patient was hospitalized. After a UBI treatment she showed definite improvement. Four days later, at about 6:30 PM, she developed a severe attack of pain in the chest and upper abdomen, marked cyanosis and nausea, a typical attack of severe coronary occlusion. She was given papaverine, heparin, Demerol and atropine, and her condition was considered extremely grave. Although she had enough medication that she was sleeping at intervals, she continued to have severe pain and was extremely apprehensive whenever aroused. Heart tones were indistinct and heart was very irregular during this time. About 9:00 PM she was given a second UBI treatment. Within an hour's time she was having marked relief of her pain and dyspnea and following this treatment she was relieved so much that she rested very comfortably the rest of the night with no further opiate or sedative whatever, and following the first evening she was not given any further opiates or pain medication. She was given a third UBI on the following day, and treatments were subsequently given on January 26, 31; February 5, 12, 16, 21, 26; March 2, 7, 12, 18, 26; April 1, 8, 15, and 22.

This case also illustrates the marked effect of UBI in these treatments. In this case if we would go more than about four or five days without administering UBI treatment she would begin to have a return of pain in the epigastrium, and marked symptoms of the condition. But when treated every four or five days, she did not have a return of pain, her condition improved gradually and she left the hospital in very good condition. The EKG reading was coronary disease with changes suggesting acute type, high in the lateral base area, and her symptoms were certainly those of the occlusion of a large
heart failure. Patient appeared to be in a terminal stage, very cyanotic, pulse very rapid, heart tones indistinct, heart markedly enlarged, high white count. Patient was given UBI treatment and followed in 24 hours with another, with some improvement in his serious condition. Treatment was continued, four UBI's given in the first ten days. Following this, patient made a very remarkable recovery. In fact, he was so improved that he felt he was cured and did not return for UBI treatment as he was told was necessary, at weekly or bi-weekly intervals. In a few weeks he returned again due to worsening condition. This same process was repeated four or five times over a two year period: the patient would receive treatment, feel so much improved that he thought further treatment unnecessary, and end up returning in critical condition to receive treatment again. Eventually, however, he followed treatment as indicated (about every two weeks). He seemed to stabilize after several months and no further treatments were ultimately required. He is able to get around normally, and except for an occasional asthma attack, he is apparently well.

The next case is W.O. (male, 70) who was under observation and treatment for two to three years. He entered the hospital with acute, severe congestive heart failure. Heart was very enlarged, patient was in terminal condition at that time, pulse was very weak and irregular, and patient was given UBI immediately. No other medication was given except UBI but he had been taking some medication previously. His improvement was definite and immediate, and he was given four treatments the first week. Following this it is very interesting to note that this man can go about four or five days and show marked improvement after UBI. Then, if he goes longer than five days without treatment, he begins to show marked dyspnea and cyanosis. If he receives a treatment every four days, he gets along well and shows cumulative improvement (to the time of this report).

C.A. (male, 77) had an acute coronary occlusion several years ago, and made a good recovery from this without UBI treatment. He recently was seen with a very severe acute attack in which he had marked evidence of coronary occlusion with cyanosis, marked dyspnea, pulse very rapid, heart tones indistinct, increased white count, and marked precordial distress. In this case we gave him UBI's immediately 24 hours apart at first for two treatments, and then 48 hours apart for two more. His improvement was definite and immediate with very good relief of symptoms. This man also had considerable tenderness and swelling in the epigastrium, indicative of passive congestion of the liver. As in the case just previously reported, this man could go about four or five days symptom-free but beyond this time a marked return of symptoms occurs until a UBI is given. With treatment he shows marked improvement and is gradually returning to a sustainable
C. PERIPHERAL VASCULAR DISEASE

As might be expected, the production by UBI of those important physiological effects of increased arteriolar flow and increased oxygenation of tissue suffering from sever lack of both is nowhere more strikingly demonstrable than in the field of peripheral vascular disease treated by this therapy. These effects are almost incredible. One has to see them to believe them.

Furthermore, there is simply nothing else comparable and available to the physician for obtaining the dramatically successful results observed following the use of UBI in peripheral vascular disease. The recovery, maintained over periods of many years, from very advanced peripheral vascular disease has been a constant and remarkable finding that has been noted and confirmed by many UBI practitioners since around 1940.

The routine installation of UBI in every hospital in the world would be justified, if only for its effects in controlling safely and efficiently many peripheral vascular disease processes hitherto considered unmanageable, except for transitory palliative treatment.

The already oft-mentioned regulatory and normalizing effect of UBI on the autonomic nervous system, plays a very important role in peripheral vascular diseases. The increased arteriolar flow, so characteristic of UBI, is of primary importance in the relief of pain, spasm, and coldness of the afflicted extremities. The increase in resistance to infection, the healing of previously non-healing ulcerative process, the sloughing off of gangrenous areas with resultant healing of adjacent tissue: all of these occur with almost complete regularity in peripheral vascular disease processes, where such a reversal of a progressively downhill course might seem incredible to those not familiar with the use of UBI in such cases.

1. Peripheral Atherosclerosis; Gangrene: Bland and Bland reported in 1959 their experiences at St. Joseph's Hospital, Memphis, with the use of UBI in ten cases of diabetic gangrene and seven cases of arteriosclerotic gangrene of the lower extremities.

In eight of the ten diabetic cases in the lower extremities, the disease process was controlled by UBI and the legs restored to normal usefulness. Of the remaining two patients, one had already lost one leg, had frank gangrene of parts of the great, third and little toes, and heel of the remaining foot; when seen last, 1959, there was complete healing of the heel area, and healing of the toes beneath the gangrenous eschar. The other patient had sympathectomy with no improvement, marked cyanosis of all toes and the distal third of the foot; she required amputation above the knee.

Of the Blands' seven patients with atherosclerotic gangrene, four recovered completely.

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1 Presented before the Shelby County Medical Society, Memphis, TN, March 2, 1959.
at one month to six week intervals until Jan. 15, 1958 and had a well functioning extremity during that period.

She failed to return for three months and when seen Apr. 15, 1958 had developed a one cm. blister on the plantar surface of the right foot, over the head of the second metatarsal joint. This rapidly developed into a 1-1/2 cm. painful ulcer and within two months, during which six UBI treatments were given, the patient developed gangrene of the second toe and osteomyelitis of the second metatarsal bone.

On June 10, 1956, the patient was readmitted to St. Joseph's Hospital and a wedge resection of the second toe and two-thirds of the second metatarsal bone was done. The wound was partially closed, packed with iodoform gauze and healed by secondary intention in six weeks.

The patient has continued UBI treatments at one month to six week intervals and two months ago developed a blister on the distal phalanx of the third toe which rapidly developed into dry gangrene of the distal one-third of the distal phalanx, and then healed under the gangrenous eschar. This patient is now free of pain, and is able to pursue her normal activities.

Olney in 1951\(^1\) reported on a series of 15 cases of diabetic gangrene of the lower extremities in which UBI was used to control the disease process. In this series, 14 lower extremities were restored to usefulness; one required amputation. Those patients who continued to take UBI over the years maintained their improvement and lived normal lives. Incidentally, the disappearance of the signs and symptoms of intermittent claudication was an outstanding feature in many of the cases reported.

Grez in 1960 in New York (as told in personal correspondence) treated a case of diabetic gangrene, so advanced by the time the patient came to him, that amputation of the left leg at the knee appeared to be mandatory. Several weeks prior, the patient, F.P. (male, 60), a mild diabetic, had burned the skin over the ankle bone on a bathtub hot water tap. There was the expected progression of blistering, swelling, discoloration, loss of feeling in foot and leg. The patient arrived in a wheelchair, leg swollen to the knee with extreme cyanosis. Without much hope, the patient was given a UBI treatment. This was in the afternoon. During the treatment, the patient stated that he felt warmth in the foot. He returned to his hotel. At 7 A.M. the next morning, he awoke, again feeling warmth in leg and foot, and noted that the bandage was quite loose. At noon, the bandage was removed; the swelling was at least 75% gone with a corresponding decrease in cyanosis. Another treatment was given, followed by two more on succeeding days. The patient was now walking with a cane and was released as fully recovered. The patient was heard from

\(^1\) Reported before the American Blood Irradiation Society, 1951.
3. **Raynaud's Disease**: In this disease of primary or idiopathic bilateral, paroxysmal cyanosis of the fingers, described first in 1862 by Raynaud, UBI has been used only rarely and no conclusion has been made to date by UBI practitioners, as to its value or lack of value in this disease entity.

In so-called "secondary" types of Raynaud's disease, if UBI helps control the primary causative process, it will help the secondary manifestations. Theoretically UBI should be of value in Raynaud's disease. Miley used UBI in two women with the primary type of disease, but was unable to follow up either case for more than two or three months, not enough to get even an idea of UBI's effect or lack of effect in this syndrome.

4. **Frostbite**: In simple or moderately severe frost-bite UBI is not necessary, obviously, but if one suspects that the frostbite is deep-seated, severely affecting fibrous, muscular and nervous tissues, UBI would be found to be most useful in reestablishing normal arteriolar flow, and preventing the effects of prolonged anoxia in the affected tissues. This is, of course, a matter of common sense and judgment, as is the use of any therapeutic measure.

5. **Varicose Veins, Varicose Ulcers**: One would not expect a therapy such as UBI to have any influence whatsoever on varicose veins, nor on varicose ulcers due to the failure of the varicose veins to function properly. Certainly in many cases, for example, a saphenous vein ligation and/or ligation of other leg veins as deemed necessary, would seem the most logical procedure.

Curiously, however, when UBI has been used in non-healing varicose ulcers either before or after venous legations, practitioners have found that the ulcers will normally heal, and much of the discomfort associated with both the varicose veins and the ulcers will disappear; the varicosities almost invariably persist as before, but the patients do improve greatly.

Apparently there is an increased peripheral venular flow as well as arteriolar flow following UBI. Otherwise it would be very difficult to explain the often rapid healing of varicose ulcers following this therapy.

6. **Thrombophlebitis**: In 1943 Miley (1) first published the effects of the use of UBI in 13 consecutive cases of acute thrombophlebitis. He noted that pain and tenderness were the first symptoms to disappear, usually within a few minutes to a few hours after a single UBI; fever when present dropped to normal. Edema was the last symptom to disappear, one to twelve days later.

In 1949 Miley and Dunning (2) published a report on eighteen more cases of thrombophlebitis in which UBI was used, ten of the acute variety and eight of the chronic. Again in the acute types pain and tenderness disappeared within a few hours or less, fever
There is no doubt in the minds of any of the UBI practitioners who have applied UBI to this disease process that UBI is the procedure of choice in thrombophlebitis.

7. **Lymphangitis**: In the section on infectious diseases, brief mention was made of the effect of UBI in controlling acute lymphangitis with or without lymphadenitis. In the days before penicillin this condition was often seen as a sequela of staphylococcus or streptococcus infections secondary to local penetrating wounds. UBI alone invariably put a rapid end to this disease process even with an associated septicemia, obviating the need for heat cradles, hot packs, etc. Those of us who have used UBI in acute lymphangitis secondary to a rapidly progressing wound infection, quickly found that this was a safe and efficient method of controlling acute lymphangitis, often with a single UBI, with a disappearance of all symptoms in a few hours.

D. **ARTERIAL HYPERTENSION**

From time to time UBI has been used in patients with varying degrees of hypertension. No conclusions can possibly be drawn as to its value or lack of value, insofar as prolongation of life is concerned. In some instances relief of severe headache was noted by hypertensive patients over periods of months to years. No harm was ever noted, however, following UBI in hypertensive patients. If a toxic factor is chiefly responsible for a hypertensive state, conceivably UBI might be of value.

E. **ARTERIAL HYPOTENSION**

In primary hypotension UBI has been used occasionally as a general measure to raise resistance and impart energy to patients whose only signs and symptoms are those of low blood pressure, easy fatigue, weakness, without evidence of any underlying disease process. In general such patients are helped by UBI to varying degrees; certainly after a few UBI's these individuals do look and act as though they had been improved and strengthened.

In secondary hypotension the treatment of the underlying causative disease is obviously paramount. If UBI is indicated and successful in controlling or eliminating the latter, it will obviously be of value.

F. **SHOCK**

As previously mentioned, UBI has often been used in patients in extremes, with profound shock. At first one hesitated to use UBI in such cases, but as no alternative existed, it was given, often with great difficulty, as can be imagined when one must withdraw 200-250 cc
DISEASES OF THE LOCOMOTOR SYSTEM

A. Myositis, Fibrositis
B. Arthritis
C. Deltoid Bursitis, Acute, Chronic
D. Osteitis Deformans

A. MYOSITIS, FIBROSITIS

In the years 1938-1943 Warter, Donio and Miley collaborated in the use of UBI at the arthritis clinic of the Hahnemann Medical College and Hospital of Philadelphia. This therapy was used in over 200 patients with varying results, some with myositis and fibrositis, some with varying degrees of rheumatoid arthritis, and others suffering from osteo-arthritis with or without an associated rheumatoid arthritis.

Almost invariably those patients considered pre-rheumatoid, with myositis and/or fibrositis responded well to UBI. They usually had erythrocytic sedimentation rate close to upper normal limits and required only two or three UBI's.

B. ARTHRITIS

1. Rheumatoid: Rheumatoid patients with over two or three finger joints affected and a sedimentation rate just above normal usually did quite well, with the exception of some 20% (a figure considered by some as the rule for spontaneous recovery), but it is the experience of these workers that most of the patients that arrived at the arthritis clinic (1938-43) were going rapidly downhill when first seen, with no signs of spontaneous improvement. Therefore it was felt that patients, whose downhill trend was so obviously reversed, had benefitted greatly from their treatment with UBI. Most of these patients required treatment over a period of several weeks to several months before results were observed.

Rheumatoid arthritis patients with great rheumatic activity over a period of several years and high sedimentation rates responded erratically, and their response to UBI was quite unpredictable. Occasionally one would observe a sensational result; the patient would
This may not seem very much to find out about the effects of UBI in arthritis after several years of work and observation in over 200 patients, but we can summarize briefly the findings:

1. Early rheumatoid patients did well generally.

2. Moderately advanced to severely afflicted rheumatoid patients responded erratically with 75 - 80% of the moderately advanced patients showing improvement.

3. Some few patients were found to be UBI-sensitive and improved dramatically after a few UBI's despite long-standing rheumatoid arthritis.

4. Old 'burnt-out' rheumatoid arthritis showed little improvement.

5. Osteoarthritis patients showed little or no improvement of their osteoarthritis, though some beneficial general effects were seen.

Let us say, then, that those UBI workers who have used UBI in a goodly number of cases of rheumatoid arthritis would always prefer to give UBI a good trial in such cases before shifting to corticosteroids, for the simple reason that, if UBI works in a patient with rheumatoid arthritis, it will always work and never lose its effect, whereas with corticosteroids one may get a rapid and excellent result, but corticosteroids do have some unwelcome side effects occasionally. With UBI one does not have unwelcome side-effects.

C. DELTOID BURSITIS, ACUTE, CHRONIC

The first report of the use of the Knott technique of blood irradiation in deltoïd bursitis and calcareous tendinitis was made in 1951 by Neff and Anderson (1), who presented their results in seventeen cases of this syndrome, stating that 88.2% of the patients treated received relatively rapid and complete relief of symptoms including those with both acute and chronic types of the disease. They attributed the success of the treatment to relief of pain, increases oxygenation of the blood, vasodilatation and certain biochemical effects. Among the objective findings, the x-ray evidence of the disappearance of calcareous tendinitis in the acute cases was consistent and most striking.

In 1953 Miley and La Plume (2) reported that they had a somewhat similar experience in twenty-two consecutive unselected cases, eighteen acute and four chronic, of deltoïd bursitis with or without calcareous tendinitis. In twenty of the twenty-two patients a complete and relatively rapid subsidence of symptoms occurred following the use of the Knott technique of blood irradiation.
2. Calcified areas, seen on X-ray examination, in and about the shoulder joint in cases of acute deltoid bursitis often begin to disappear within a few days after initial blood irradiation treatment. However, these calcified areas rarely show change in cases of chronic deltoid bursitis. Our experience has indicated that the long-standing calcium deposits do not disappear in the same manner as we have observed in the acute cases.

3. The pain of chronic deltoid bursitis, often present for months or years, usually begins to subside within a few days. In these patients blood irradiation is given twice at one-week intervals and thereafter at four-week intervals until all pain disappears. Three to four yearly blood irrigations are recommended for patients who have been suffering over a period of many years.

4. Insomnia and limitation of motion tend to disappear as the pain subsides. Insomnia is cured very early and limitation of motion is one of the last symptoms to disappear.

The disappearance of calcareous tendinitis is extremely interesting. Calcareous tendinitis was present in sixteen cases of acute deltoid bursitis and in all of the four cases of chronic deltoid bursitis. In ten of the patients with acute deltoid bursitis there was a disappearance of calcium. Academically this is an interesting finding. However, many other writers have pointed out that the disappearance of calcareous tendinitis occurs as the inflammation subsides, whether that subsidence involves a long or short period of time. We believe the really important factor is the rapid subsidence of pain and other symptoms.

Those patients who have received intensive X-ray therapy without benefit respond more slowly to blood irradiation therapy then patients who have not. Some process apparently takes place in the soft tissues after X-ray therapy and these patients seem little more refractory to treatment.

**SUMMARY OF MILEY-LA PLUME REPORT**

1. Twenty-two consecutive unselected cases of deltoid bursitis are reported in which the Knott technique of blood irradiation has been used.

2. Eighteen were cases of acute deltoid bursitis, and four were cases of chronic deltoid bursitis.

3. In sixteen cases of acute deltoid bursitis and four cases of chronic deltoid bursitis, calcareous tendinitis was present.

4. In ten cases of acute deltoid bursitis with calcareous tendinitis, the calcium deposits disappeared after treatment.

5. Following use of blood irradiation therapy rapid relief of pain, followed by
DISEASES OF THE NERVOUS SYSTEM

A. Headaches  
B. Progressive Myelitis  
C. Multiple Sclerosis  
D. Acute Chorea  
E. Paralysis Agitans  
F. Bell's Palsy

A. HEADACHES

1. **Vascular, Migraine**: The migraine headache is the one which is most frequently encountered and is characterized by prodromal aura, one-sided pain at first, but at times may be generalized or bilateral; it may last from a few minutes to several days, be minor at times, or may produce prolonged invalidism. Irritability, nausea, photophobia, vomiting and diarrhea may accompany the headache, completing the migraine syndrome.

Over a period of several years Miley had occasion to use UBI in twelve patients suffering from classical, long-standing migraine. In eleven, UBI was followed by striking improvement from the beginning, though UBI had to be continued in seven individuals every six to ten weeks, from one to three years, during which time migraine did not recur. Adequate diet, i.e. low salt, no coffee, no alcohol, was found to be of equal importance in several of these patients. Tobacco was also forbidden, but many of the patients refused this regime, and preferred to depend on UBI alone, contrary to Miley's opinion, which is that anything that can help a patient get rid of a disease process, should be used. In the one failure, following two UBI's the patient stopped treatment.

UBI is of value in migraine and should be tried if simpler methods fail.

2. **Post-traumatic Headache**: Most UBI practitioners have had occasion to treat patients who complain of headache long after some trauma of the head or neck. Naturally, if a large hematoma is still present, surgery may be indicated, but there are many patients who have had no signs of hemorrhage or hematoma after apparently minor traumatic head or neck accidents, yet do complain of persistent headaches, localized or generalized. The headache of the so called "whip-lash" effect encountered in patients who have had auto
Lymphocytes: ten (10).

Consultation by Dr. J.W., Chief of Polic. Service of Municipal Hospital on 8/11/47, stated:

"Moderate nuchal rigidity, absent abdominal reflexes, no response to plantar stimulation of left foot. Decreased sense of touch and proprioception. Left patellar reflex decreased. Weakness of abdominals, iliopsoas right and left, left quadriceps and hamstrings, triceps sura of left calf, and of gluteus medius. Could not use right leg against gravity but power was faint and sensation not impaired. Patient was slow in reactions and responses took second breath after counting to nine. Impression: Myelitis, possible progressive."

Consultation by Dr. A.S., Consulting Neurologist of Municipal Hospital on 8/12/47 was, quote:

"Patient offered few complaints. He continued to be listless. Nuchal rigidity was moderate. No Kernig perceptible. Cranial nerves were intact, speech was rather scanning and hollow, no nystagmus. Arm reflexes equally present. Abdominal and cremasteric reflexes absent. Supra patellar and patellar reflexes present and equal; more on the right than on the left, no clonus. Suggestive Babinski bilateral. Definite motor weakness both legs but not a paralysis. Sensory line up to D 8, 10, to touch, pain and temperature.

Impression: Meningo-myelitis of unknown etiology and of definitely guarded prognosis. Respiratory paralysis should be watched for. Symptomatic treatment and prevention of foot drop."

Patient transferred to Shadyside Hospital on 8/14/47, with very slow progression of all signs and symptoms plus the loss of rectal sphincter control.

Admission T.P.R.: Temperature 101.6, pulse 92, respirations 20.

Blood Count: RBC 4,800,000, Hemoglobin 15.0 gm., Leukocytes 11,000 polys. 69%, lymphs. 29%, Sed. Dist. 55mm. in 1 hour.

Blood Serology: Negative

Urinalysis: Reaction - acid, Color - red, slightly turbid, Sp.Gr.-
Vitamin B, C, and E and Prostigmine, 15 mg., t.i.d.

This patient received UBI treatments on the first, second and eighth hospital days. Marked improvement began on the 4th hospital day and progressed rapidly until his discharge on the 20th hospital day. On discharge all reflexes were present and equal.

It is hoped that interest will be stimulated in the application of the use of UBI in similar toxic or infectious states of the spinal cord. When the patient was last examined on 1/29/48, all reflexes were equal and present. His only complaints consisted of fatigue following long walks and the symptoms of a mild residual cystitis.

The successful recovery of progressive myelitis treated by ultraviolet blood irradiation therapy (Knott technique) deserves to be reported since we know of no other such case in the literature we have read in which a patient with such advanced symptoms recovered completely. Present day methods of therapeutics still leave much to be desired in such cases considering morbidity and prognosis.

This is a remarkable recovery and therefore is presented, as another field for the use of UBI.

C. MULTIPLE SCLEROSIS

UBI has been used in eight cases of multiple sclerosis to date, in three by Miley, in five by Barger. Miley's patients showed no response whatsoever, and three of Barger's patients showed no response; one of his five, however, bed-ridden during five years of hopeless invalidism and in apparently the terminal stage of multiple sclerosis, recovered most spectacularly following four blood irradiations and for some years lived a relatively normal life, free from spasm and pain and able to walk fairly well. His fifth patient improved markedly and maintained improvement for several months, though not in an advanced state when first seen.

The fact that even one patient with advanced multiple sclerosis could improve is remarkable, as nothing does these patients any good as a rule except occasional spontaneous remissions which rarely last more than a few weeks to a few months. However, an accurate evaluation is impossible from this scant data available in such a variable disease.

Since no adequate therapy exists for multiple sclerosis, the fact that an occasional patient may be UBI sensitive justifies the use of UBI in all such patients, though we wish to emphasize our belief that only a small fraction of such cases can be expected to receive
Certainly UBI does no harm in such patients, and may prevent, in severe cases, unwelcome sequelae.

The use of UBI in diseases of the nervous system where infection, bacterial or viral, and/or inflammatory reaction, play a predominant etiological role, is definitely indicated. Often what seems to be irreversible damage will be found to be reversible, the damage being more apparent than real.
DISEASES OF THE SKIN

A. Psoriasis
B. Pemphigus
C. Dermatitis Herpetiformis
D. Eczematous Dermatitis
E. Exfoliative Dermatitis
F. Chronic Urticaria

Before the advent of the corticosteroids, UBI was used in several apparently intractable diseases of the skin, with varying results.

A. PSORIASIS

Miley used UBI in eleven cases of psoriasis; no effect was noted in nine, a slight improvement in one, moderate improvement in the eleventh. He concluded that UBI is of no value at all in psoriasis.

Of interesting note, however, external ultraviolet has been found to be helpful to many psoriatics.

B. PEMPHIGUS

In two advanced, apparently moribund cases of pemphigus, UBI was used by Miley. In the first one, no effect was obtained and the patient continued her downhill course and expired.

In the second case, the patient began to improve after the first UBI. Two more were given in the same week and the patient recovered uneventfully, leaving the hospital ten days after initial UBI.
F. CHRONIC URTICARIA

This was mentioned briefly in Chapter 6 on Diseases of Allergy and will be treated quickly here as well.

In a young woman of 26, giant urticaria had been recurring more and more frequently and severely over a period of five years. When first seen by Miley, six weeks after hysterectomy, following which giant urticaria had appeared and never subsided, she was apathetic, extremely weak and exhausted, and had anorexia. Following one UBI the edema began to subside; after a second UBI a few days later it disappeared. She received three UBI's in the following year, and had two minor recurrences that first year. The next year she had two UBI's and no recurrences. She was completely free of urticaria for the four years she was followed up, contrasted to five years of increasingly frequent and severe attacks previous to UBI.

In general UBI practitioners are agreed that UBI has controlled chronic urticaria rather well over the years.

As for dermatitis generally, we feel UBI has been an extremely valuable therapeutic aid.
DISEASES OF THE EYE

A. Acute Iritis, Uveitis
B. Syphilitic Retinitis
C. Miscellaneous

A. ACUTE IRITIS, UVEITIS

Two outstanding papers were written by excellent ophthalmologists about the effects of UBI in inflammatory diseases of the eye. The first, by Rhoades (1) in 1951 described the excellent results observed in uveitis following the use of UBI. The author concluded that UBI had been found to control uveitis rapidly and safely.

The second report, in 1952 by Farmer, Sullivan and Sullivan (2) consisted of a controlled study of a series of fifty patients with acute or subacute iritis with or without iridocyclitis. UBI was used on 30 of the patients; the remainder received corticosteroids treatment. All the UBI-treated patients recovered quite rapidly and needed no further treatment; there were no complications. In the control group, there were several complications, and 20% became blind in the affected eyes. Recovery in those patients that did recover, was notably slower and more difficult than the UBI-treated patients.

With such results clearly demonstrated by Farmer et al, it seems incredible that UBI is not used routinely in all severe cases of acute iritis and/or iridocyclitis.

B. SYPHILITIC RETINITIS

In two cases of syphilitic retinitis with dimness of vision the chief characteristic, UBI was used by Miley with some success, as both patients, men of 40 and 44 respectively, were unable to read at all before UBI and both were able to read without difficulty following one and two applications of UBI respectively. The improvement lasted for over one year after which time the patients were not seen again.

Knott and Hancock (as told in personal correspondence) observed a similar result in two similar cases. One of these patients, having advanced cerebral lues, died of that disease
A. Preoperative Protective Effect
B. Postoperative Use

A. PREOPERATIVE PROTECTIVE EFFECT (REBBECK EFFECT)

1. Dilatation and Curettage in Post-Abortional Sepsis

E.W. Rebbeck of Pittsburgh (1) was the first to describe the pre-operative protective effect of UBI, in a report on the use of UBI in 21 cases of post-abortional sepsis, in seventeen of which UBI was given before uterine dilatation and curettage, and four post-operatively as follows:

<table>
<thead>
<tr>
<th>PRE-OPERATIVE DAYS</th>
<th>NUMBER OF PATIENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>0 (same day)</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>POST-OPERATIVE DAYS</th>
<th>NUMBER OF PATIENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

In the seventeen cases in which UBI was used preoperatively, all were in excellent clinical condition within 24 - 48 hours following dilatation and curettage, with temperatures not exceeding 100°F post-operatively and usually normal within 24 - 72 hours.

In all four cases in which dilatation and curettage was performed without UBI, there was a marked temperature rise with the appearance of toxic symptoms following surgery. In these cases UBI was given to control the apparently acute endometritis which developed.
2. Removal of Tonsils and Teeth

Miley noted that in several children with rheumatic fever and infected tonsils, that, if UBI was given one or two days before tonsillectomy, no increase in rheumatic activity was noted and that the removal of the focus of infection was of definite value to the little patients.

Similarly he noted that UBI given before tonsillectomy or tooth extractions in patients with rheumatic arthritis, apparently was rarely if ever followed by an increase in rheumatic activity.

However the most important work in UBI given before tooth extractions, was done by Rebbeck in the years 1938 - 1948 in fifty-five patients (4). Blood cultures taken 2 - 21 hours post-UBI in the first thirty patients were all negative, as contrasted with the known rate of 18 - 20% incidence of streptococcus viridans bacteria normally found after tooth extraction. Blood culture studies were discontinued in the last twenty-five patients.

The cases varied from febrile states including acute rheumatic fever to varying degrees of caries with abscess, periodontal infection, etc. As many as eight teeth were pulled at one time. There were times when the patient's life was feared jeopardized by the highly necessary extraction of teeth, such as in the presence of rheumatic heart disease, coronary sclerosis, etc. In addition it was found to be to the patient's advantage when indicated, to be able to extract teeth in the presence of acute rheumatic fever, acute rheumatoid arthritis, etc. Some of these cases had previous extractions, ending up with dry sockets, osteomyelitis, etc. A consistent lack of post-operative pain and distress with rapid healing was the rule. There were no complications in any of the fifty-five patients treated.

One other patient was treated post-operatively because she had one tooth extracted and infection of the socket developed. She had several days of acute distress unrelieved by penicillin. Her recovery following UBI was not remarkable but steady and uneventful.

In all cases the protection afforded by this treatment was truly remarkable, according to Rebbeck and the collaborating dentists.

It has been the consensus of opinion among UBI practitioners that UBI exerts a powerful pre-operative protective effect in a wide variety of conditions, notably the removal of infections in patients in whom this might be considered dangerous. General surgeons, including Rebbeck, Hancock and Olney all felt that the post-operative course of severely ill patients was very favorably influenced by the use of UBI pre-operatively.
attack is withstood much better.

The treatment should be repeated the day after surgery.

If preferred, after the first treatment the patient may be watched for a few hours, and in cases in which there is not a ruptured viscous, appendicitis, or such an obvious acute surgical emergency, the acute symptoms will begin to subside rather rapidly, and in the case of the acute gallbladder or acute pancreatitis, etc. the patient may be spared an operation.

In gallbladder disease his therapy is extremely valuable. My own series covers over 400 cases. The problem of the acute gallbladder is greatly reduced, since in patients with acute severe gallbladder disease, in most cases symptoms will subside rapidly, vomiting cease, and the critical attack will be rapidly averted. There is reduction of swelling and pressure in the biliary ducts, promoting drainage. If necessary, later, the patient may or may not have an operation.

If symptoms do not subside in two or three days, the patient with a gangrenous gallbladder or an impacted stone with a gangrenous duct may be operated on immediately, and it is surprising how well these patients withstand this surgery, having blood irradiation before the operation. Usually cholecystectomy can be performed instead of cholecystostomy. Patients having had the gallbladder removed who continue to have biliary attacks with pain, vomiting, clay colored stools, etc., although on good medical and dietary management, will get complete relief in most cases by ultraviolet blood irradiation therapy in addition to the medicine and dietary treatment. I have had over 100 such cases of from 2 to 25 years duration with complete relief of symptoms in 19 percent.

In non-specific infection or cellulitis, both acute and chronic, this has proven to be of great value. I have had over 600 patients in this group.

In acute, severe, pelvic cellulitis and puerperal sepsis, patients respond promptly with marked relief of pain, swelling and temperature, and recovery is hastened in most instances without surgical drainage.

In chronic pelvic infection or cellulitis, patients with massive inflammatory disease without definite abscess or cyst improve markedly with this treatment.

The swelling, pain and tenderness disappear and in a reasonably short time most of these cases return to normal.
The uses of UBI in surgery are manifold and of extreme value to the medical world, to say nothing of the patients involved. The main problem today is to get the medical profession to use UBI where indicated and never let a patient die for lack of UBI.
A. Guide to Treatment
B. UBI as a Diagnostic Aid
C. Non-Healing Wounds
D. Impotence
E. Primary Anoxemia
F. Malaria
G. Threatened Abortion
H. Renal Tuberculosis
I. Carcinoma
J. Sarcoma
K. Hodgkin's Disease

In this chapter will be presented some topics, conditions or disease processes that did not seem to fit in any other chapter.

A. GUIDE TO TREATMENT

1. **Acute Infections**: In order to intelligently treat a patient suffering from an acute infection by means of UBI, it is necessary to realize that certain general principles are applied to all cases, and that the physiological events and responses, occurring in various types of acute infection following blood irradiation, be understood.

The most important single guide to the progress of a patient receiving ultraviolet blood irradiation therapy for an acute infection is the subsidence of toxic symptoms. In a patient progressing favorably, the toxic symptoms subside in 24 to 48 hours; if they do not subside in 48 hours, at the most 72 hours, the treatment must be repeated. This is a fundamental law of UBI used to control acute pyogenic infections, or used for its detoxifying effect in any disease process. Often, non-subsidence of toxic symptoms in 48 - 72 hours means an unsuspected septicemia. In some instances, it can be repeated in 24 hours, whereas in pneumonia, for example, it is usually preferable to wait 48 - 72 hours before repeating the UBI. Even if the temperature remains elevated or only falls slightly, one does not need to worry about the outcome once the toxic
4. That bacterial endocarditis is present, in which case blood cultures are positive and usually abnormal heart sounds develop; in some cases, the temperature may drop to normal and remain so, with a negative blood culture.

C. NON-HEALING WOUNDS

In 1944, Miley (1) reported the successful use of UBI in six cases of non-healing wounds. A few excerpts from this paper are of interest and are presented as follows:

It is generally recognized today that there occurs in a very low percentage of individuals who have recovered from the immediate effects of wounds, a failure of healing, despite the very best local treatment plus normal supportive measures such as infusions, transfusions, rest and adequate diet. This failure is apparently due to the absence in such individuals of a specific resistance factor, intrinsic in nature and of unknown character, often referred to as a general resistance factor. In any case, wounds do not heal normally in these few individuals as contrasted to the relatively rapid healing in most individuals. Acting on the belief that a normal ultraviolet balance might be absent in such individuals and that as a result, ultraviolet deprivation might be closely connected with the absence of the necessary specific resistance factor which regulates normal wound healing, we have in the past five years applied to six individuals with non-healing wounds the Knott technic of ultraviolet blood irradiation therapy. The duration of the non-healing wound in each of these individuals up to the time of the use of this method varied from five months to six years.

In one of the individuals a non-healing fecal fistula was present; in two, multiple extensive non-healing lesions of the skin and soft tissue; in one, a post-incisional failure of abdominal fascia and muscle to close despite several re-suture attempts; in one, a 3 inch by 3 1/2 inch leg ulcer; and in one, a non-healing amputation stump.

The rapid appearance of wound healing in and recovery of all six of these individuals in a most convincing fashion has led us to believe that possibly, ultraviolet deprivation played some part in the persistent failure of the normal healing process to appear in each instance.

1. Case #1: Mrs. A.H., 33, was first seen July 15, 1940, at which time her chief complaint was a discharging fistula from the terminal ileum, right lower side, approximately 7 cm. long. She gave a history of an appendectomy in 1920, the presence of abdominal adhesions in 1922, acute abdominal pains in 1933, followed by the removal of a chocolate cyst of the ovary November
of the duodenum as well as a band of adhesions from the lower ileum to the lower angle of a previous abdominal incision. The patient was discharged on October 31, 1940.

On August 12, 1941, she was readmitted and an elliptical incision was made around a draining sinus which reached down to the rectus fascia. Pathological examination of the specimen revealed a fistula lined by nonspecific granulation tissue. The patient was discharged three days later with the wound still draining.

On October 8, 1941, this patient was again readmitted and the draining sinus was opened and packed by iodoform gauze, but by this time the patient had become quite apprehensive, extremely depressed, and had suffered from insomnia for the previous six months. Anorexia and a loss of weight were both present at this time. On October 15th, she was referred to the blood irradiation clinic in the hope that a general supportive measure might be of value. On that day, ultraviolet blood irradiation therapy was given. The same evening the patient slept soundly for the first time in several months, and continued to do so until her discharge from the hospital October 18, 1941. Her general condition seemed to improve although the sinus to the rectus fascia which had been packed by iodoform gauze continued to drain.

A second blood irradiation was given November 22, 1941, and the patient's health improved enormously with a complete disappearance of anorexia, insomnia, and weight loss which loss was regained completely in the two months following the first blood irradiation. The sinus failed to heal and we recommended that the patient have another surgical removal of the offending sinus on the grounds that since her general condition had improved so greatly it was entirely possible that wound healing would occur following complete removal of this sinus. The patient reluctantly consented to this further surgery, and on March 19, 1942, the sinus tract was extirpated. The postoperative wound healed completely and has remained healed for two years. The patient's general health has remained good.

3. Case #5: Rev. M.W., age thirty-eight, No. 50625, was admitted to the hospital November 29, 1939, following an automobile accident. Physical examination revealed fracture of the right femur and severe lacerations of the right forearm, with an associated severance of the extensor pollicis longus tendon. The tendon was repaired immediately on admission and healed quite well. The patient's general condition improved and he recovered from the acute effects of his accident fairly well. In this patient, however, despite all known general and local therapy, there occurred a
E. PRIMARY ANOXEMIA

In one female patient, a single school teacher of 55, sent to us for treatment of a marked neurasthenia and general exhaustion state of unknown origin, who had been refractory to dietary therapy including adequate vitamins and mineral intake. We found on physical examination only a chalky white skin coloration but on laboratory examination found a venous oxygen content of 1.0 volumes per cent as compared to the normal 12 to 16 volumes per cent. There was no explanation for this as the erythrocyte count varied between 3,000,000 and 3,600,000 with an average hemoglobin of 10.5 gm. per cent. We began UBI empirically but noted no effect clinically or on the venous oxygen findings. UBI was given once a month for 10 months with the venous oxygen suddenly rose to 10.0 with a marked and sudden improvement in the clinical picture. The patient's neurasthenia and exhaustion disappeared completely; her color, which had been a chalky white, became normally pink and she stated she felt better than she had in years. The venous oxygen continued to rise somewhat, to 12.1 volumes per cent, and has never fallen below 9.0 volumes per cent since. The patient has now been under observation for more than five years and has remained relatively free of the severe neurasthenia and exhaustion symptoms present during the first ten months of treatment. Oxygen determinations done two to three times yearly have shown the venous oxygen value to vary between 8.5 and 11.0 volumes per cent. Although this is only a single case, much can be learned from it. In the first place, here we have a single woman of 55 with neurasthenia and exhaustion of unknown origin; only a routine oxygen finding revealed one of the lowest recorded venous oxygen values compatible with life, yet the erythrocyte count and hemoglobin were in no way related to the low venous oxygen value, which must be considered as a good index of the arterial oxygen (which was normally about four volumes per cent higher than the venous, this difference representing the loss in the body tissues; in this case, judging from the color of the patient and the general clinical picture, not much more than 2 to 3 volumes per cent was given the tissues). As a result of all this, it seems rather obvious that the neurasthenic and fatigue symptoms were produced directly by a primary anoxemia, very probably due to the loss of ability of hemoglobin to pick up oxygen normally.

Plus this is an exceedingly instructive case as it opens wide the field for investigation as to the etiology of many neurasthenic states plus the fact that such states when due to anoxemia may be greatly benefitted by constant UBI.

F. MALARIA

In seven cases of malaria, induced in paretics by transfusions of tertian malarial blood, UBI was used by Miley instead of quinine to terminate the paroxysms after seven to ten days of the disease.
A consecutive series of 30 patients suffering from 42 episodes of threatened abortion were given ultraviolet blood irradiation treatments by the Knott Technic when low abdominal cramps and/or vaginal bleeding and/or premature labors occurring during their pregnancies indicated the probability of threatened abortions.

Eleven of these episodes were inevitable, or incomplete abortions, which cleared without curettage.

In 30 of the episodes, pregnancies continued uneventful to term or near term. One of these (Patient No. 8) was given ultraviolet blood irradiation as a prophylactic measure. A rapid subsidence of cramps and bleeding was noted shortly after UBI.

In one, treatment was unsuccessful, with the patients running a rather stormy course, due to marginal placenta previa. Further ultraviolet blood irradiation treatment was refused by this patient. (No. 10).

Schultz concluded that clinical observations of this series indicates that the Knott Technic of ultraviolet blood irradiation is a valuable adjunct to the treatment of threatened abortion and in the prevention of complications in the incomplete abortion. Certainly, UBI is a very valuable agent in the treatment of threatened and apparently inevitable abortion.

(Refer Table I, next page.)

H. RENAL TUBERCULOSIS

In an apparently terminal case of originally bilateral renal tuberculosis with an associated secondary infection in the nephrectomized patient, UBI was followed by a remarkable improvement. The patient had no further secondary infection, lived in apparent comfort for another two years, and finally succumbed to extensive renal tuberculosis of the remaining kidney, aggravated by the administration of a large dose of sulfa drugs given by a well-meaning physician.

The use of UBI in renal tuberculosis can do no harm, but not much should be expected in this way of controlling the tuberculosis.
<table>
<thead>
<tr>
<th>Passed Large clots, no fetus found:</th>
<th>7/6/51</th>
<th>Flow 12 hours</th>
<th>2.5</th>
<th>4</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cramps ceased; delivered at term.</td>
<td>12/1/51</td>
<td>Cramps 4-6 minutes</td>
<td>7.5</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>Gradually: UBL: Fetus not found; now subsided</td>
<td>11/1/51</td>
<td>Flow, cramps 12 hrs.</td>
<td>2.5</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Passed several Large clots before</td>
<td>9/2/50</td>
<td>Cramps</td>
<td>7</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Placc. Prev.</td>
<td>9/24/51</td>
<td>Flow 6</td>
<td>4.5</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>12/1/50</td>
<td>Cramps, spotting, 12 hrs.</td>
<td>3</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Next day passed clots and</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Fetus Found.</td>
<td>9/11/51</td>
<td>None.</td>
<td>5</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Placental tissue passed next day.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Term</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Propphyactically: normal delivery at</td>
<td>10/12/49</td>
<td>None.</td>
<td>5</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Previous miscarriages at 7 and 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>days: delivered OK at term.</td>
<td>5/6/51</td>
<td>None.</td>
<td>7.5</td>
<td>5</td>
<td>35</td>
</tr>
<tr>
<td>Less cramps after UBL: Flow</td>
<td>1/22/50</td>
<td>None.</td>
<td>3.5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Three times given Propphyactically.</td>
<td>11/8/50</td>
<td>Cramps.</td>
<td>2</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Condition</td>
<td>Date</td>
<td>Cramps, spotting</td>
<td>Flow</td>
<td>Cramps, Intermittent</td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>------------</td>
<td>------------------</td>
<td>------</td>
<td>----------------------</td>
<td></td>
</tr>
<tr>
<td>Flo'ed</td>
<td>9/20/50</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>1/20/48</td>
<td>1/5/52</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>9/4/48</td>
<td>7/28/51</td>
<td>6</td>
<td>8</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>2/28/51</td>
<td>2/2/51</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>(only survival of last 3 pregnancies)</td>
<td>9/10/17</td>
<td>3.5</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Symptoms ceased, deliv. at term</td>
<td>5/8/52</td>
<td>3</td>
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UBI AND HIV/AIDS

A. UBI as HIV Therapy
B. Opportunistic Infections and AIDS-Related Diseases

This chapter was not present in the first edition of this book (1965), due to the obvious fact that AIDS did not yet exist. In recent years, however, with the renaissance of UBI therapy and research, use of intravenous ultraviolet is being examined to treat AIDS as well as the ever-present opportunistic infections related to AIDS.

A. UBI AS HIV THERAPY

The most notable research performed on treatment of AIDS with UBI was performed in Russia in 1989. This study was conducted cooperatively between the S.M. Kirov Institute for Postgraduate Training, Leningrad, with the USSR Academy of Medical Science. This research, conducted by A.G. Rakhmanova (Head Professor, S.M. Kirov Inst.), V.A. Isakov, Y.N. Shulov and S.A. Simburtsen (Head, S.M. Kirov Inst.), is reproduced in its entirety as follows.

Russian Study in UBI Therapy in HIV-Infected Persons

The 1980's were noted by the appearance of a new infectious disease, AIDS, which is registered now in more than 150 countries.

The multiplicity of clinical manifestations of AIDS and an ability of human immunodeficiency virus (HIV) genome to integrate in the host cell genome with further long-time persistence in a human organism hamper diagnostics as well as the right choice of pathogenetic and supporting therapy. The malignant lesion of the immune system in an AIDS patient is accompanied by a sharp decrease of immunobiological resistance and an alteration of responsiveness to conventional drug therapy against opportunistic infectious agents (1, 4).

The majority of medicinal forms applied for the treatment of AIDS possess serious drawbacks; they are highly toxic, expensive, cause only a short-term remission, and require prolonged courses of therapy. The above-mentioned reasons stimulated a further
woman with pneumocystosis (a pulmonary form of AIDS), as well as disseminated
respiratory and digestive tract candidiasis, proved fatal (3). Four patients had
AIDS-related complex (ARC), 18 persistent generalized lymphadenopathy syndrome
(PGLS), 16 HIV infection without any clinical symptoms of the disease (HIV+).

The case record given below adequately represents the cases in which UBI was used as
a component of a complex treatment in HIV-infected patients.

Case #1: Patient L., aged 28, Soviet citizen, applied to the hospital of her
own will with a request to be examined for AIDS as she had numerous
sexual contacts, with foreigners included; she denied previous drug usage
and blood transfusion.

When antibodies to HIV had been identified in her blood serum and immune
blotting reaction (Westernblot), she was hospitalized to the special
department of the infection hospital named after S. P. Botkin for extensive
clinical and laboratory checkup and treatment.

Examination results showed normal body build and good nutrition. Skin was
clear. Enlarged jugular, armpit and lymphatic knots up to 1 - 1.5 cm of firm
elastic consistence, unattached to other tissues, painless, could be palpated.
The belly was moderately swollen. Liver was firm; it advanced 3 cm out of
the rib arch edge on the right side. Hemogram, functional liver tests showed
no pathology.

Disproteinaemia, suppression of T cell immune chain, correlation of
CD4/CD8 in reaction with monoclonal antibodies was 0.47 (normal level 1.4
± 0.1).

Case #1 got five sessions of treatment with UBI, with intervals according to
the scheme, with increasing doses of falling radiation. Each time 80 to 85
ml of blood was irradiated. During the first session, the dose of falling
radiation was equal to 38 j/m², which corresponded to the radiation area
equal to 5 cm² of the quartz cuvette used with the Russian-made Knott
Hemo-Irradiator.

Each session lasted 789 seconds; this was defined by the blood volume and
its flowing speed through the quartz cuvette of the apparatus. The flowing
speed of blood was 17 ml/minute on average. During the following session,
the dose of falling radiation constantly increased and during the fifth one, 23
j/m² with radiation area equal to 25 cm² was effected.

In two weeks after the course of UBI, objective studies showed that
suppression of T-cell chain of immune system (CD4/CD8 ratio was 1) were marked.

Patient S. received five sessions of UBI according to the scheme with increasing dose of falling radiation from one session to another, as in above-mentioned case with patient L.

After completing the course of UBI, the patient noticed improvement in the state of health and general conditions. Appetite was better, the sizes of peripheral lymphatic knots and liver decreased. By the end of UBI, the total number of leukocytes had not been changed (4.8 X 10^5); however, the number of lymphocytes had increased from 1,170 up to 1,660 in 1 mcL of blood. Changes in Proteinogram were characterized by decrease of the quantity of summary amount of protein from 74 g/L to 66 g/L, increase of albumin synthesis from 48 g/L up to 59 g/L, decrease of gamma globulins from 26% to 18% and increase of the meaning of A/G (albumins/globulins) coefficient from 0.93 to 1.46. Decreasing of levels of main serum immunoglobulin was registered: G (28 - 15.6 g/L), M (3.7 - 1.08 g/L), A (94.4 - 1.92 g/L), correspondingly.

Tendency towards normalization of correlation of serum immunoglobulin was marked: G:A as 6.3:1 and 8.1:1; G:M 7.5:1 and 14.4:1 (norm 20:1); A:M as 1.1:1 and 1.8:1 correspondingly. It proves redistribution of protein synthesis that evidently may be connected with decrease of polyclonal activation of B-lymphocytes. Indices of C3 complement and transferrin were practically unchanged.

Relative increase of CD4 cells from 24% up to 39% and CD8 cells from 23% up to 45% was ascertained and correlation CD4/CD8 was practically unchanged (1.0 - 0.86 correspondingly).

One month after the end of UBI, the number of leukocytes in peripheral blood remained unchanged, but the number of lymphocytes increased to 2,350 in 1 mcL of blood. The level of factors of nonspecific resistibility (immunoglobulin, 03 complements, transferrin) had not changed. CD4/CD8 correlation was 1.0.

Six months later, clinical studies and laboratory tests showed that the general condition of the state of health of patient S. remained satisfactory, objectively without changes either in the organs or in the systems.

Indices of T and B cell chains of immune system and factors of nonspecific protection remained practically without dynamics in comparison with the
Six months later, the patient's status remained the same without worsening. She was feeling well. The clinical signs of AIDS-related complex were present. One should note that during this period, the patient had one recidivation of a chronic herpetic infection. The laboratory data analysis revealed a further increase of peripheral blood leukocytes (6.7 X 10^9) and lymphocytes (3,350 in 1 ml) The non-specific resistance indices remained practically unchanged. The relative CD4 (17%) and CD8 cells (30%) indices were found to be decreased. The CD4/CD8 ratio made up 0.58. Later on, based on the complex of clinical and laboratory data, we diagnosed the next stage of HIV-infection -- AIDS.

The UBI did not cause any allergic reactions in HIV-infected persons. It neither possessed toxic effects on the patient's organism, nor caused unpleasant sensations, and was well-tolerated.

The UBI effect is apparently a result of a whole chain of processes. For example, ultraviolet irradiation of pestilence virus in birds causes structural changes in pyrimidine base dicers like nucleic acids and cytosine hydration, thus leading to the alteration of the virus itself.

It might be considered that irradiation of HIV-infected blood, conducted according to our procedural recommendations, causes an impairment of the first stage of HIV reproduction in blood cells. The fixation of the HIV on the lymphocyte membrane is inhibited due to a decrease of the number of CD4 receptors recognized by the virus. The viral and human blood cell surfaces are covered by a glycoprotein layer. The latter, as a result of an electromagnetic energy effect caused by UBI, gains electric charge of the same polarity, both on the virus and the lymphocyte. The repulsive electrostatic forces emerge and inhibit the virus' fixation on the cell membrane. Perhaps there are some other active mechanisms that concurrently ensure a positive clinical and laboratory effect of UBI in the treatment of HIV-infection.

The gradual dose increase principle, used in our UBI scheme, is based on the fact that every next procedure will be effective only if the ultraviolet irradiation dose exceeds the previous one. At the same time, one should take into account both the high stability of the virus against ultraviolet irradiation (6), and a possible immunosuppressive effect of high ultraviolet irradiation doses on HIV-infected persons' impaired immune systems. It is necessary to note that an inclusion of UBI in the complex therapy of HIV-infected patients should be undertaken, if possible, at the very early stages of an infectious process. In this case, the remission might be achieved sooner. It must also be stressed that a treatment of a HIV-infected person should be conducted under sufficient clinical and laboratory control.
THEORETICAL CONSIDERATIONS

A. Response of Apparently Unrelated Disease States to the Same Therapeutic Agent
B. Possible Etiologic Role of Ultraviolet Deprivation
C. Photochemical and Biochemical Considerations
D. Physiological Implications

From a practical clinician's point of view the theoretical principles underlying any therapeutic effect are only incidental to the effect and its reliability. Nevertheless from an academic point of view it is interesting and often useful to know just what the possible causes of such an effect may be, in order to better understand what is occurring and to extend further the horizon of knowledge of the subject and its related fields.

In consideration of UBI we find that clinicians who have first hand knowledge of and experience with the method are agreed on its reliability when used according to known clinical indications as already described. As a result we have in UBI then, a method of irradiating blood safely, the clinical use of which is followed by certain definite phenomena, already described. From a theoretical standpoint we wish to know to as great an extent as possible just how the clinical effects were produced. That the whole story may never be told, at least beyond a certain limit, is as true of this as of any other phenomena; this is the challenge to investigators, as their search for scientific knowledge of the subject progresses. However, practitioners will employ the method to obtain desired effect, mindful that the theoretical background may never be understood completely.

As a result of using UBI for over 25 years on more than 14,000 occasions\(^1\), the author has been able to gather together the results of clinical observation, correlate them somewhat and evolve what he feels is a not too unreasonable explanation for the many striking clinical effects observed to occur following the use of UBI. This explanation and its significance follows.

\(^1\) That is, as of 1965, when this chapter originally was written. It has been used a great deal since that time.
That an energy deprivation state exists and becomes increasingly serious as a patient continues a downhill course, despite a multitude of therapeutic effects, it seems obvious after watching the dramatic and rapid reversal of the clinical course of apparently moribund patients following UBI (intravenously introduced ultraviolet energy).

Since the response is to ultraviolet energy, not infra-red, nor X-Ray, nor more powerful types of atomic energy, it follows that the type of energy most probably lacking, (and supplied by UBI) is in the range of energy commonly known as ultraviolet. That this is a well known component of sunlight needs no further mention here, nor does the fact that life on this planet is almost completely dependent on the sun and its rays.

Therefore it is my carefully considered opinion that whatever energy deprivation state exists in humans is one within the ultraviolet range, and, for the lack of a better word, we have called it hypouvism.

As a result of the above it seems highly likely that in UBI we have, to begin with, a process that may be described as a non-specific, intravenous type of physical medium producing profound systemic effects secondary to a series of photochemical chain reactions of extreme complexity.

In order to go further into the theoretical possibilities, we must now consider the proposition of ultraviolet deprivation and the possible physiological role played by ultraviolet.

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**B. POSSIBLE ETIOLOGIC ROLE OF ULTRAVIOLET DEPRIVATION**

That diseases may be produced as a result of inadequate ultraviolet intake seems highly probable to the author.

1. In acute infections of the upper respiratory tract there is no question but that the incidence is much higher in Winter with low atmosphere ultraviolet concentrations than in Summer. This can be due to the direct bactericidal action of ultraviolet in cutting down the infections air borne respiratory microorganisms or, as perhaps not fully appreciated, by a lowering of body resistance to bacterial and virus infection due to inadequate ultraviolet intake. That this latter is extremely important may be deduced from the fact that many individuals normally highly susceptible to common colds and accessory nasal sinusitis in Winter, do not have these diseases after receiving ultraviolet rays externally in properly adjusted therapeutic doses. This is in direct contradiction to the report published many years ago by Clark, and widely accepted, stating that she observed no protective effect against upper respiratory infections as a result of external ultraviolet therapy. However, a careful review of Clark’s report reveals a number of statements which are not all in agreement with the experience of excellent physical therapy physicians. Certainly we have
furunculosis, those patients whose chronic infections disappear relatively rapidly following the initiation of continued UBI, are suffering, in the author's opinion, from chronic ultraviolet deprivation. In these individuals the ability to pick up atmospheric ultraviolet possibly is frequently impaired by a not too good peripheral circulation and consequent failure of the skin capillaries to absorb ultraviolet energy at a normal rate.

2. In metabolic diseases one must consider the possibility of ultraviolet deprivation playing an important etiologic role also, since rickets, a metabolic disease, is believed to be the end result of ultraviolet deprivation which first results in a failure to synthesize vitamin D, the specific metabolic product necessary to the body to prevent rickets. In fact, Hess and Unger (as related in personal correspondence) originally tried to use ultraviolet intravenously in rachitic children as a treatment for rickets, but failed because of technical difficulties. If one metabolic disease can be wholly or even partially due to ultraviolet deprivation, others can.

The rapid inactivation clinically of many bacterial toxins (e.g. botulism) following UBI shows clearly that the addition of ultraviolet irradiated blood intravenously had a profound influence on those metabolic processes directly involved in the elimination of toxins which are not so easily eliminated but often produce metabolic chaos and finally death. That the introduction of ultraviolet and its photochemical effects are followed by such a marked detoxifying effect clinically again suggests that a deficiency state exists, which, however, rapidly disappears on introduction of the missing factor, again ultraviolet, which forms such an integral part of our environment in the first place, and the importance of which apparently has received insufficient attention to date.

The response following the use of UBI of such chronic disease processes as rheumatoid arthritis and bronchial asthma, both of which have definitely metabolic backgrounds, though of varying character, again suggest that an inadequate ultraviolet intake may have led to have aggravated the abnormal metabolic picture present in those patients at the time of initiation of UBI. Again we repeat our conviction that when the introduction intravenously of an integral part of our environment, whether physical or chemical, e.g. ultraviolet energy, is follow by a rapid clinical improvement, the possibility of an inadequate intake of that element having been present in such an individual exists. In the instance of selected cases of rheumatoid arthritis responding favorably to UBI, we feel that those metabolic factors, (which incidentally are certainly poorly understood at present), directly concerned with the production of rheumatic activity and its physiological-pathological end results may have been set in motion to a great extent by the absence of adequate ultraviolet, which absence conceivably plays as important an etiologic role as psychic maladjustments and chronic infection in the progression downhill of patients with rheumatoid arthritis who are UBI sensitive. Similarly in those cases of bronchial asthma responding to UBI, a similar inadequacy of ultraviolet intake may conceivably play an important etiologic part in the progression of the disease, with a resultant failure to absorb and utilize oxygen normally, a breakdown in autonomic regulatory control of the
Study of the effect of ultraviolet blood irradiation therapy on the blood of both normal and sick individuals has brought to light many interesting findings, all of which tend to suggest that ultraviolet blood irradiation therapy initiates a primary photochemical reaction which is followed by a series of chemical chain reactions that would not occur at all or only vary slowly if ultraviolet blood irradiation therapy had not been used. These chain reactions are apparently closely connected with the normalizing, regulating healing mechanism of the body, and probably occur to a much greater extent in the blood during the recovery of sick individuals than in normal individual’s blood. For example, the return to normal following ultraviolet blood irradiation therapy of the high sedimentation rate, the high lymphocyte count, low venous oxygen values and of the clumped fat particles in the patient with a severe pyogenic infection is much easier to observe than any change in the blood or normal patients, though we know that even in the latter, an increase in the anoxic response, a change in the Tiselius curve, an increase in the opsonic index of dogs may all occur. So many and so varied are the clinical and laboratory findings following the use of the relatively small fraction of the total blood volume used in ultraviolet blood irradiation therapy, that we must seriously consider the possibility of a series of chemical chain reactions as having been initiated following ultraviolet blood irradiation therapy; this occurrence would in turn account to a great extent for the type of clinical response obtained so consistently.

D. PHYSIOLOGICAL IMPLICATIONS

If, as postulated, the human body does require an adequate ultraviolet intake in order to maintain a normal or high resistance to infection and to abnormal metabolic changes, it is apparent that there can be present many possible gradations of ultraviolet absorption and utilization, varying from the intake of no ultraviolet to that of large and excessive amounts. Employing the well-known initials U.V. signifying "ultraviolet", we have coined a new terminology and have proposed the word UVism or uvism to express the comparative amount of ultraviolet energy being absorbed, utilized and dissipated by the body. That body state in which the optimum amount of ultraviolet energy absorbed, utilized and dissipated by the body is called "normal uvism"; insufficient amounts of ultraviolet would be characteristic of "hypouvism", none at all, "anuvism", and too great amounts would produce "hyperuvism".

It is a matter of common knowledge that a certain amount of ultraviolet is necessary for the maintenance of normal health whereas overdoses of ultraviolet (usually by over-exposure to the sun or ultraviolet lamps), may lead to profound asthenia, severe toxemia, collapse and even death. We have already stated our opinion based on extensive clinical observations of ultraviolet blood irradiation therapy patients that lowered resistance to various infections and to abnormal metabolic diseases may, to a more or less great extent, be due to ultraviolet deprivation, either acute or chronic, since intravenous application of ultraviolet energy by use of the Knott technique is followed by such rapid, normalizing
case in overwhelming septicemia with rapid fatal results; the latter would be exemplified by such rapid abnormal metabolic changes as occurs in cases of fulminating malignant rheumatoid arthritis with extensive bone, joint and soft tissue change within four to six weeks time.) This state may be due a congenitally poor ultraviolet absorption mechanism or to the complete absence of atmospheric ultraviolet, or to both.

B. Severe Hypouvisum: That physiological state in which there exists an advanced or severe lack of ultraviolet energy in the body, characterized by a very low resistance to infection and a very high susceptibility to abnormal metabolic changes due either to a poor ultraviolet absorption mechanism, inadequate atmospheric ultraviolet, or both. If progressive, this may merge into anuvism. In the case of a severe pyogenic infection, destruction of the micro-organisms responsible for the infection may relieve the severe hypouvisum by improving capillary ultraviolet absorption through the skin; if the infection does not subside despite sulfa drugs, penicillin, or other antibiotics, ultraviolet blood irradiation therapy alone may abolish the severe hypouvisum and restore to normal the body's natural immunological defense mechanisms. Similarly, in an early progressive case of rheumatic arthritis, one often may observe a rapid improvement following ultraviolet blood irradiation therapy with probable resultant primary abolition of the severe hypouvisum and consequent return to normal of the normal metabolic processes of the body.

C. Mild or Subclinical Hypouvisum: That physiological state in which there exists a slightly inadequate intake of ultraviolet energy, characterized by a fairly good resistance to most infections and to abnormal metabolic changes, but also by a potentially lower resistance to both due chiefly to inadequate atmospheric ultraviolet, occasionally to a mediocre absorption mechanism. Lowered resistance to upper respiratory infections in Winter may be considered an example of this uvistic state, as may a low grade non-progressive chronic fibrositis or rheumatoid arthritis.

II. Normal Uvism: That physiological state in which there exists neither too small nor too great an intake of ultraviolet energy, but there is an intake of ultraviolet adequate to maintain the individual in apparently normal health. This has been classified into three groups as follows:

A. Hypouvisic Trend: That physiological state in which the intake of ultraviolet energy is within the lower limits of normal but the potentiality for hypouvisum is always present. This condition possibly exists in a large percentage of individuals who spend little or no time outdoors, Winter or Summer, due to occupational or other reasons; their resistance against
C. Fulminating or Terminal Hyperuvism: That physiological state in which the excessive intake of ultraviolet energy is so great that there appear such severe symptoms as a profound depression of the respiratory center, a failure of the heart regulating mechanism, cardiovascular collapse, and coma with death the inevitable outcome.

This extreme type of hyperuvism is rather rare in the pure form also but may occur again, the most dangerous immediate effects observed in individuals dying from over-exposure to ultraviolet are those directly produced by generalized tissue penetration by ultraviolet rays. In the early work by Knott with dogs given greatly excessive ultraviolet energy by UBI, death was produced by the heavy overdose of intravenous ultraviolet, which produced quite high temperature and toxic effects; according to Knott, the dogs died due to a marked depression of the respiratory center, with the respiratory rate falling to five per minute, four, three, two, one, and finally none at all.

How to measure the above gross clinical evidence of the various physiological states of uvism is not yet known to us, but the author feels certain that eventually such a measuring device will be found, so that quantitative estimations of these states will be made possible, instead of the above clumsy though practical, arbitrary clinical standards first proposed by the author.

**ENERGIZING EFFECT**

Granting all we have said about ultraviolet deprivation being responsible for lowered resistance to bacterial and virus infections and to abnormal metabolic changes, we must consider under theoretical considerations another aspect of the theoretical problem, namely the possibility that ultraviolet blood irradiation therapy has a direct energizing effect over and above minimal ultraviolet requirements which are first fulfilled. It is entirely possible that with the intravenous injection of ultraviolet irradiated blood comes sufficient ultraviolet energy to actually produce an energizing or stimulative effect, with a corresponding speeding up of those biochemical reactions directly responsible for the satisfactory clinical effects described previously.

Since heat and light, especially ultraviolet, are the chief natural sources of energy on this planet, it is not so strange that the intravenous administration of ultraviolet energy in optimum dosage should have an energizing effect on the human organism with a resultant stimulation and mobilization of all the strong defense mechanisms of the body, which, given the slightest chance, so regularly function to maintain an individual in an apparently normal state of health.
SUMMARY AND CONCLUSION

SUMMARY

Much of the available data regarding the Knott technique of ultraviolet blood irradiation therapy (UBI), or intravenous ultraviolet, has been presented.

The method used (UBI), as originally developed by E.K. Knott, D.Sc., has proven to be quite safe; after use over 300,000 times in over 30,000 patients, by at least 60 physicians, over a period of thirty years\(^1\), no harmful effects have been observed.

UBI has been found by its users to be a safe and efficient method of controlling bacterial and viral infections. In many cases of fulminating and overwhelming toxemia secondary to such infections, UBI has been a lifesaving measure.

Many beneficial biochemical and physiological effects have been observed to occur almost immediately following the use of UBI; others, less dramatically, but consistently, over long periods of time in chronic disease patients. Noteworthy of mention are the following:

1. A marked and rapid detoxication effect in most patients suffering from various degrees of toxemia, from mild to profound. This may occur in thyrotoxicosis, for example, or in toxemia secondary to infections.

2. An increase in venous oxygen findings in patients with abnormally low values.

3. A profound, basic regulatory or normalizing effect on the autonomic nervous system in diseases where serious abnormalities of its functions exist, e.g., vasospasm generally, paralytic ileus, reflex anuria, persistent bronchospasm, etc. An increased arteriolar flow, for example, has been observed to occur consistently after UBI and has proved to be invaluable in a wide variety of disease processes, as might be expected.

4. A tremendous increase in resistance to infection, bacterial or viral.

\(^{1}\) i.e., at the time this chapter was written, circa 1965.
CLINICAL EFFECTS OF UBI

I. MARKEDLY SUCCESSFUL IN:

A. Viral Infections


2. Atypical pneumonia.

3. Acute poliomyelitis, encephalitis, myelitis.


B. Bacterial Infections


2. Pneumonia.

3. Wound infections, lymphangitis, lymphadenitis.

4. Peritonitis.

5. Typhoid fever.

6. Recurrent furunculosis, carbunculosis.

C. Profound overwhelming toxemia due to many fulminating disease processes (a life saving measure).

D. Severe damaging inflammatory processes, e.g. acute: thrombophlebitis, fibrositis, bursitis, nephritis, iritis, uveitis, cholecystitis, pancreatitis.

E. Diseases due to inadequate peripheral circulation, e.g.: varicose and diabetic ulcer, peripheral atherosclerosis, some types of gangrene, vascular headache.

F. Non-healing wounds, delayed union of fractures.
The failure of UBI to be accepted in a wide scale by the medical profession is to be deplored. The reasons for its failure are, in the authors' opinion, of a promotional and competitive nature, but not because of lack of value of the method.


(20) Blum, H. F. Am. J. Physiol. 129: 312 (1940).


(21) Personal Communication


CHAPTER 3


CHAPTER 4


CHAPTER 5


CHAPTER 6


CHAPTER 13


(2) Chapter 5 ibid.

(3) Chapter 4 ibid.
CHAPTER 22


CHAPTER 23


