

SWANK'S MULTIPLE SCLEROSIS NEWSLETTER

JANUARY 1990

NUMBER 39

- FROM THE OFFICE OF ROY L. SWANK, M.D. Ph.D.
- EDITOR: BARBARA BREWER DUGAN ASSISTANT EDITOR: BARBARA KALKHOVEN
- DESIGN COORDINATOR: ANTHONY J. LECKBAND

FEMALE CONCERNS

Prior to a woman's menstrual cycle there usually is an increase in MS symptoms. These symptoms usually begin one week prior to menstruation and subside during menstruation. Fatigue increases and existing symptoms become slightly worse. Depression and mood swings usually accompany these symptoms.

Amenorea (absence of menstruation) can develop lasting several months. Heavy menses may also be a problem and tend to increase fatigue.

Although PMS affects most women in different degrees it seems to be more of a problem for the MS patient. This problem has also been recognized by the ARMS (Action for Research Into Multiple Sclerosis) group in London England. Dr. Alec Forti has been researching this area for several years.

What to Do?

Some patients have found that B complex taken regularly helps to reduce the anxiety and other related symptoms. It may not be necessary to reduce your activity level at this time unless forced to do so. Patients on birth control medication do not seem to experience as much trouble. Mild sedation may also be required if symptoms increase. Otherwise resting twice daily by lying down is advised during this time.

If a hysterectomy becomes necessary it can be performed without the fear of having an exacerbation of disease if the patient has been following diet carefully, and surgery is followed by 2 units of fresh frozen plasma. Complications are infrequent and minimal if they occur at all. Recovery is usually rapid and the patient then suffers much less, if at all, from PMS.

QUESTIONS ?

This issue of the Swank Newsletter will be directed towards questions received from patients. If your questions do not get answered in this issue, following issues will consider them. Send to us any other questions you would like answered or topics you would like covered.

Does cooking with unsaturated oil turn it into saturated fat and how about processed food made with unsaturated fats?

The following oils are recommended for cooking on the low-fat diet: Sunflower, olive oil, soy bean oil, cotton seed oil, canola oil, sesame seed oil and corn oil. These oils all contain linoleic acid and soybean oil contains some alpha linolenic acid. When cooking with one of these oils it should not be overheated (smoking point) because exposure to the air and overheating damage the essential fatty acid activity. Once opened, always keep your oil in the refrigerator. Olive oil is apt to harden in the refrigerator, so keep in a cool place. When reading labels remember that soybean oil and cotton seed oil are often processed and the label will not indicate this. Safflower oil and sunflower seed oil are usually not processed. It is wise to check with the company producing the product before using it. A simple call to the nutrition department of the company will get you an answer. Always question if the oil has been hydrogenated. If the product has been fried it is not permissible.

How do you feel about the use of Evening Primrose Oil?

Some patients supplement their essential fatty acid intake with Evening Primrose oil. At the present time there is no experimental evidence that it is effective. The linoleic acid found in polyunsaturated oil is converted to gamma linolenic acid found in Evening Primrose oil. Make certain your diet contains a minimum of 4 teaspoons of unsaturated fat daily and more if you are active, plus 1 teaspoon of non-concentrated Cod Liver oil.

What recommendations or advice do you give young patients on the diet, or anything else related to MS?

It is our feeling that MS can be controlled if the patient is willing to work at it. Young patients must look into the future with optimism and continue to be productive and active. So much of the literature that falls into the hands of a newly diagnosed patient describes a future of serious disability laced with a high rate of divorce. A young newly diagnosed patient should take control of their disease and

make decisions as to their treatment, career choices and daily life situations consistent with good management of the disease.

Low fat diet has become much easier to follow in the last 5 years. Because the American Heart Association is now recommending a low fat diet for the treatment of heart disease many new low-fat and non-fat products have come to the market.

When is a second opinion needed for a person diagnosed with MS?

If a patient is dissatisfied with the diagnosis or lack of diagnosis by the physician a second opinion should be considered. When a patient first consults a neurologist the signs may have abated and the patient may be neurologically normal. In the early stages of disease many of the diagnostic tests are also normal making the diagnosis difficult.

Are there any other physicians practicing the Swank Diet? If so, who are they and where are they located?

Many physicians are recommending the Swank Diet but are not actually instructing the patient on how to follow diet. Dr. John McDougal supports Dr. Swank's work and has opened a Health Center in Deer Park, California that specializes in Health Enhancement programs including M.S. His telephone number is 800-862-7575 (in California) 800-358-9195 (outside California). In New York Nancy Mazarin, RD. Her telephone number is (516)466-9087. ARMS Unit - Central Middlesex Hosp, London England also recommends the low fat diet.

Do you recommend any other supplements other than the Cod Liver Oil?

Patients do not do well on large amounts of supplements. It is important that the patient take non-concentrated Cod Liver oil or a comparable source of Essential Fatty Acid, i.e., Omega III Fatty Acid, Evening Primrose oil, Linseed oil, and Black Current oil. A multiple vitamin is also suggested. In the last two years we have instructed some patients to take 1,000 mgs. of Vitamin C and 8 oz. of Cranberry juice daily to reduce bladder infections. Our studies have shown that large amounts of vitamins are not effective and may cause problems.

Should I have regular blood tests?

An annual blood test including cholesterol levels is recommended.

Coconut oil is known to be very high in saturated fat, to what extent is this true regarding the coconut itself, and the coconut milk?

Coconut meat and milk contain a high level of saturated fat. In 3 1/2 ounces of milk there are 24.9 grams of saturated fat and in the same amount of meat there are 35.5 grams of fat.

Should patients with MS avoid becoming pregnant?

Many neurologists advise patients with MS to avoid pregnancy, others are non-committal about pregnancy. A recent statistical study seemed to show that disability was not increased by pregnancies, but on the other hand, many experienced obstetricians will tell you that pregnancy poses a serious threat to the MS patient.

It is my own experience that patients already moderately or severely disabled often appear to suffer little increase in disability from pregnancy. On the other hand patients in the early phase of the disease often suffer very evident increases in disability from pregnancy.

During pregnancy patients almost always feel very well and their daily fatigue is reduced after the first trimester. Also delivery is usually without incident. In the following 2 to 4 weeks many patients develop exhaustion and general weakness and their MS symptoms intensify, forcing the patients back to bed for variable periods. Very slowly these symptoms subside, often taking up to six months before reasonable recovery occurs.

Examination during this period reveals general weakness, subjective alteration of sensations (usually pin prick), often blurred and even slight foggy vision, and slight ataxia and other evidence of incoordination. Hyperactive reflexes and gross incoordination are absent, and plantar responses have not changed. The incapacitation seems to have been due largely to general weakness, and deep fatigue. In a few cases new symptoms with appropriate neurological signs develop post delivery. In these cases it is clear that the patients have suffered an exacerbation of the disease.

Although the ultimate progress of the disease and duration of life in MS may be little affected by pregnancy, the quality of life is severely affected in approximately half of those patients after delivery of the baby. In other words their activities and feeling of well-being are significantly diminished for long periods if not permanently after delivery.

We treat this problem in the following way. It is suggested that conception be delayed for at least 1 year on the low fat diet and that the dietary fat be restricted to below 10 grams daily during this year. Second, following delivery we suggest that the mother receive either 1 unit of whole blood or 2 units of plasma immediately after delivery. In our experience this has successfully prevented aggravation or exacerbation of the disease in almost every case. Patients recover rapidly, are free of fatigue, and are soon able to care for their baby. We also suggest that pregnancies be limited to no more than two during the MS depending on the state of the disease.

In cases where blood or plasma is rejected it is helpful if the patients' time in bed post-delivery can be extended for a week or so. The patient should get up to go to the bathroom or to eat, but otherwise be in bed. In these cases assistance with the baby is needed.

Patients want to know just what constitutes an exacerbation?

This is not easy since even those actively engaged in the care of MS patients may not agree.

I designate activity of MS as an exacerbation when new, clear cut symptoms with appropriate neurological signs are present. When the signs and symptoms are disabling one can consider the exacerbation severe, and mild when not severe and not disabling. In early phases of the disease exacerbations are usually mild and are followed by remission (recovery from the symptoms). They may also occur several times a year particularly early in the disease. Also in the early phases, the disease is usually exacerbating-remitting without indication that the disease is basically progressive. Later an element of progression is added, and finally the disease progresses without exacerbations.

Fluctuations of disease are more frequent than exacerbation and are often confused with exacerbations by the patients. The fatigue which was already present increases and is usually accompanied by general weakness. Also the increased fatigue may be accompanied by subjective alterations in sensations, blurred vision (without double) increased urinary symptoms (which must be distinguished from a urinary infection), and other symptoms such as confusion and increased memory problems all of which are difficult to objectively evaluate by the physician. These fluctuations usually last for a few days. They can be due to exposure to heat (although remember that extreme heat can cause real exacerbations of disease), to physical and psychological stress and to nervous tension.

It is often difficult to tell whether you are dealing with a severe fluctuation or with a mild exacerbation. The overlap must be considerable. Don't worry, the treatment is always the same, rest and if very nervous mild sedation.

Physical and nervous stress deserve added attention. They are the usual cause of fluctuations in patients on diet. Rarely do these factors cause exacerbation of disease unless the stress is continuous and severe. Also remember that changeable weather (October - November and April - May) often causes mild fluctuations in your disease.

I have mentioned to you before that on diet the frequency of exacerbations and their severity rapidly decrease and after a few years virtually disappear unless undue stress or failure to continue diet occurs. For patients on diet fluctuations will occur from time to time, but exacerbations seldom occur.

LET'S TALK ABOUT DIET

Eating out- Watch that skinned chicken breast. Some restaurants are promoting low-fat meals including chicken breasts that have been skinned and char-broiled. **BE CAREFUL** - This "lean" looking meat may be injected with butter prior to getting to the restaurant. Unfortunately, this is often done to produce a moist piece of chicken. Always check with the restaurant carefully.

MISCELLANEOUS OFFICE NEWS

The office will be closed except for emergencies from March 16th to April 2nd.

Please remember to cancel appointments you are unable to keep. Many people are on our waiting list. Thank you.

To aid in our research we are asking that all patients who have received blood products following childbirth, surgery, exacerbation, or on a maintenance basis to please submit the following information and mail it to our office. It is becoming increasingly clear that many people are receiving infusions from their private doctors and we need to have this information.

Name, Address, Phone number, Infusion dates, describe any effects of the infusions. Let us know if you mind being contacted for more information.

Mail to Dr. Swank, O.H.S.U. L-104 3181 SW Sam Jackson Park Rd, Portland, OR 97201

Thank you for your assistance and cooperation.

RECIPES

Cinnamon Coffee Cake

1 1/2 cups flour
2 1/2 tsp. baking powder
1/2 tsp. salt
1/2 cup sugar
1 egg
1/4 cup oil
3/4 cup skim milk

Beat egg; add milk and oil; mix. Sift together the flour, baking powder, salt and sugar. Add to egg, oil and milk mixture. Stir until flour moistened.

Topping: Combine following with fork in separate bowl:

1/2 cup brown sugar
1/2 cup chopped nuts
2 tbsp. flour
2 tbsp. oil
2 tsp. cinnamon

Spread half the batter in bottom of 8" square baking dish or pan. Bake approx. 30 min. at 350 °F.

Apple-walnut Cake

4 cups coarsely chopped apples
2 cups sugar
2 eggs
1/2 cup Saffola Oil
2 tsp. vanilla
2 cups all-purpose flour
2 tsp. cinnamon
1 tsp. salt
1 cup chopped walnuts

Combine apples and sugar; let stand. Beat eggs slightly; beat in oil and vanilla. Mix and sift flour, baking soda, cinnamon and salt; stir in alternately with apple-sugar mixture. Stir in walnuts. Pour into greased and floured oblong pan 13 x 9 x 2 inches. Bake at 350 °F about 1 hour, or until cake tests done. Frost with lemon-powdered sugar frosting.

Frosting:
3 cups powdered sugar
2 tbsp lemon juice
2 tbsp hot water
few grains of salt

Mix all items in mixer until spreading consistency.
(48 tsp oil = 3 tsp per serving)

Coffee Cake

Streusel Mixture

1/2 cup brown sugar
2 tbsp oil
2 tbsp flour
1 tsp cinnamon
1/2 cup chopped walnuts (optional)

Batter

1 1/2 cup flour
2 1/2 tsp baking powder
1/2 tsp salt
1 egg
3/4 cup sugar
1/3 cup oil
1/2 cup milk
1 tsp vanilla extract

Grease 8" x 8" x 2" baking pan.
Oven 375 °F

Make streusel mixture. In small bowl combine brown sugar, oil, flour, cinnamon and nuts, mix with fork until crumbly. Set aside. In a medium bowl, beat egg until frothy. Beat in sugar and oil. Add milk and vanilla. Set aside. Sift flour and baking powder, add to egg mixture. Alternate streusel and batter in layers in prepared pan. Bake 20-25 minutes, or until cake tester inserted in center comes out clean. Cool. Serve warm. Makes 16 servings.

Pecan Pie

3 slightly beaten eggs
1 cup dark Karo syrup
1 tsp salt
1 tsp vanilla
1 cup sugar
1 cup chopped pecans

Mix all ingredients and pour into lined pie tin. Bake 450° for 10 minutes then reduce to 350° and bake about 40 minutes or until tester comes out clean.
With Mayo crust 1/6 of pie equals 1/2g Saturated 5g oil.

RESEARCH

1990 FOCUS

PLASMA ABNORMALITY: The isolation and identification of a plasma protein which appears to be abnormal in MS. Possible benefits of this work are twofold; first, the protein difference can be used in the development of an early diagnostic test for MS. Second, once the abnormality has been identified, it may be possible to utilize this information in the treatment of MS.

EARLY DIAGNOSIS: Anomalous electrokinetic behavior of MS plasma using the Streaming Potential Apparatus, an objective test to replace the Red Cell Mobility test as adjunct to diagnosis. Early diagnosis is key to treatment of disease. Finding the plasma abnormality may also be used in very early diagnosis of MS.

PLASMA THERAPY: Supportive therapy in those patients who need more than the low-fat diet or who need support so they can continue to work is being continued.

PUBLICATIONS: Submitted for review

- 1) Abnormal Plasma cholesterol lipid transport proteins in MS
- 2) Effects of limiting fat consumption in early and late MS.
- 3) Early assistance in diagnosis of MS by red cell electrophoretic mobility test.

The above referenced have been our focus and will continue to be addressed provided we have the necessary funds to continue.

Make donations payable to O.H.S.U. FOUNDATION SWANK M.S. RESEARCH.
Mail to Dr. Swank L-104

BEST WISHES FOR A GREAT NEW YEAR!!!

Roy P. Swank

and Staff.

Swank - Research
March 1990

Page 3 of 3

to O.H.S.U. Foundation - Swank MS Research for \$20, \$50, \$75, \$100, \$250, \$500, \$1,000 or more (or less) whatever you can afford and put it in the mail to Dr. Swank so that he can immediately proceed on this very very important research project.

God bless you,



Allan J. Kvasnicka

P.S.: Debbie and I are asking both sides of our family to support this very important research project with their contributions. This will include parents, brothers and sisters, uncles and aunts, etc. Please consider asking your whole family to support your fight for good health as an MS patient with their tax deductible contributions.

ALLAN J. KVASNICKA

6910 Vista Willow, Dallas, Texas 75248

March 1990

Dear MS Patient,

I have asked Dr. Swank to allow me the privilege to write you this letter to appeal to you, as fellow MS patients (present or former) of Dr. Swank, to financially support a very important research project currently being launched by Dr. Swank and his assistant, Roy Garvin. This opportunity has developed out of their continued research which has resulted in the identification of a protein component in the blood plasma of MS patients that differs from the same component in non-MS plasma. The healthy protein component transports cholesterol esters and saturated fats in the circulating blood. The hypothesis that this research project will attempt to prove is that the protein component that Swank's team has identified is the inherited genetic defect which predisposes an otherwise healthy person to MS.

The specific goals of Swank's research project is to first (1), demonstrate that this abnormal MS protein in fact fails to function normally and secondly (2), show that when it is replaced by the same, but healthy protein from normal plasma that normal fat transport occurs. If the Swank team is successful, synthetically producing a healthy protein component for MS treatment purposes begins to seem possible. Wouldn't it be an answer to prayer for MS patients to be able to receive a healthy protein component injection for successful treatment and maintenance purposes similar to insulin injections for diabetics. Please understand that there is risk in this research, but that it must be pursued.

Now let me tell you why I (46) and my wife (36) believe so strongly in Dr. Swank, Roy Garvin and this research project. Debbie was diagnosed as having MS in March, 3 years ago. Through a friend, whose brother has now been a patient of Dr. Swank's for over 12 years, we learned of Dr. Swank, his research, the low fat diet and fresh frozen blood plasma infusions. Within 30 days, Debbie and I were in Dr. Swank's office and Debbie has been a patient ever since. Debbie has followed the diet religiously and I wish I could report that the diet was the cure and all lived well ever after. However, that is not the case. The diet has slowed the progression of the MS in Debbie, we are sure, but in her case, as in some others, additional remedies are needed!

Right before Christmas 1989, we had a terrible cold spell here in Dallas and with the stress of the holidays, Debbie drifted into an exacerbation during which she was entirely numb from her neck down, experiencing total fatigue, had balance problems, couldn't sleep, experiencing poor circulation, had frequent mood swings, poor bladder control, etc., and with three kids at 13, 9 and 5 you know all too well what we were going through. After the second day that Debbie could not get out of bed, I said that's it, we're going to find a Doctor in Dallas, Texas that would supervise Dr. Swank's instructions of giving Debbie fresh frozen plasma (FFP). The only Doctor that I found then (we have subsequently found a neurologist that will cooperate) was a Doctor who is a family friend in our church and she agreed to supervise the treatment under Dr. Swank's orders. The good Lord gave Debbie and I the same blood type, so I have been Debbie's plasma donor. NOW STAND BY FOR THE GOOD NEWS!

Debbie's infusion in accordance with Dr. Swank's instructions was done on January 16, 1990. On January 18, 1990, 95% of Debbie's numbness was gone, her fatigue was significantly reduced, she went to church the next Sunday in high heels because her balance was so improved, she slept like a baby, had improved bladder control, her depressed attitude was eliminated and generally had a significant glow about her. However, this treatment is not a cure but a maintenance opportunity. The treatment has been repeated as of March 1, 1990 with similar results, understanding that Debbie was not in an exacerbation prior to this last treatment.

Now for emphasis on why I am qualified to write you this letter. I have personally witnessed and lived a dramatic and significant health improvement for my wife as a DIRECT RESULT OF DR. SWANK'S FFP INFUSION TREATMENT for her. As God as my witness, the FFP works and we must help Dr. Swank NOW to prove why and how it works. The Swank team needs \$150,000 to properly fund the research effort previously described which will possibly be done at an institute in London, England which is interested in fat research and its relationship to MS.

In conclusion, Dr. Swank is 81 years old, has helped thousands of MS patients and given of himself tirelessly in his effort to solve the mysteries of MS. We all can be a part of Dr. Swank's research project by reaching down deep into our financial resources and giving to this critical project as much as we can spare right now. So please do not put this letter down. Pick up the enclosed return envelope and insert a check (tax deductible donation) made payable

SWANK'S MULTIPLE SCLEROSIS NEWSLETTER

JUNE 1990

NUMBER 40

- FROM THE OFFICE OF ROY L. SWANK, M.D. Ph.D.
- EDITOR: BARBARA BREWER DUGAN ASSISTANT EDITOR: BARBARA KALKHOVEN
- CONTRIBUTING EDITOR: ANTHONY J. LECKBAND

OUR OFFICE IS MOVING !!!

Our office will be moving to a new location. The University has purchased office buildings off the hill and they are relocating some offices, one of which is ours. This will be a change for the better. As many of you are aware we would win no prize for having a "pleasing to the eye" office. This move will give us more space and nicer surroundings. Our telephone number and mailing address will not change, except our new mailcode to be put after Dr. Swank's name is MP 140. The office will be close to where we are now, and we are assured the parking will be better. There will be no stairs making easier access for wheelchairs. All in all, we are very enthusiastic about this move and feel everyone will benefit. A map is attached. We will move during the month of August while our office is closed. From August 1, 1990 to September 4, 1990 all calls to the office will be forwarded to our Physicians' Answering Service. Only medical emergencies will be answered. Remember this is a vacation for the office so you will need to have prescriptions filled and other routine matters handled before August.

DO YOU HAVE THE BLUES

If you are troubled by occasional depression caused by life's ups and downs you are a member of the majority and need not worry. Depression may occur following increased and prolonged nervousness or fatigue. If the cause is fatigue going on to exhaustion, rest and calm surroundings are important therapies. If nervousness and agitation is the main or a contributing cause, mild sedation to promote calm and regular sleep may be necessary, usually both factors are involved, but one factor will often predominate.

Patients often complain of not being able to handle even the telephone ringing, and may find that they become very reclusive during these periods. It is important for the patient to remember that this is really fatigue talking and that you are not losing your mind. Rest and mild sedation usually bring the patient back to normalcy.

The most common type of depression that our patients experience is caused by the occurrence of upsetting events

such as divorce, loss of earning ability, death or catastrophic illness in a loved one. These factors can be considered uncontrollable causes and tend to be relieved with the passage of time.

If you experience deep mood swings, a feeling of disinterest in life, periods of weepiness and loss of sex drive, you may belong to a small percentage of patients whose depression usually responds well to antidepressants.

A few patients have suffered from manic depression psychosis. In addition to MS treatment they need psychiatric treatment usually with medication. They continue to do very well with continued counseling and medication.

TREATMENT

For mild cases of depression caused by outside factors a mild sedation and rest usually works well. Because many patients are sensitive to medication it may be necessary to try several dosages of different drugs before good results are attained.

More severe depression requires antidepressant drugs. One problem with sedation or antidepressant drugs is that they may not be consistent in their effect. One reason is that patients differ. For example, mild sedatives may actually make a few patients very nervous or hyperactive and thereby prevent sleep or relaxation. The antidepressants are equally unpredictable. Although they are designed to give the patient a psychological lift accompanied by a calm feeling, often they may produce either a severe high or cause further depression. In most patients the antidepressants work well, as do other sedatives. One can see why, however, it is necessary to monitor the patients carefully even when receiving small amounts of a sedative or an antidepressant.

COUNSELING:

Counseling is beneficial especially during the initial adjustment period following diagnosis. A diagnosis of MS may mean life style changes and even role reversals within the family unit children should not be forgotten and included during the time of counseling.

ANXIETY

In a previous newsletter we discussed anxiety. We would like to write about this again. Have you been driving along in your car and suddenly felt anxious and fearful, had difficulty catching your breath, and noted shakiness of hands and legs, loss of concentration? You pull your car to the side of the road and wait until the anxiety passes. Or have you awakened in the night terribly afraid with a feeling of heaviness in your chest, and your heart beating rapidly? These are ANXIETY ATTACKS. They are seen frequently in our patients but also in the general population.

~~Most MS patients are nervous, tense, and sensitive.~~ The degree to which patients suffer from psychological factors varies, but it is often considerable and can be disabling to some extent by itself. Calm MS patients are rare. As a result patients often have difficulty sleeping and often are irritable. Emotional bursts of crying are not unusual. Headaches, abdominal pains, palpitation of the heart, and backache often result. In addition stress can often build up and produce severe psychosomatic symptoms, and even result in aggravation or increase MS symptoms in the patients.

HELP:

Some patients can talk or think themselves into a calmer state, but many cannot. These latter have been helped by mild sedation. This can help them sleep so they are rested and can face the next day with renewed vigor. It can also help them to remain calm during the day. Patients are very sensitive to nervous tension. If they become agitated for days, temporary and even permanent increased severity of their disability can occur. Massage, removal to peaceful surroundings for a time (vacation) are often effective, but when these measures fail sedation is available.

ROUTINE LAB TESTS-WHAT DOES IT MEAN?

Your Doctor may ask you to have a routine blood chemistry at the time of your annual examination. From these tests anemia, various infections, liver enzyme levels, cholesterol and triglyceride levels can be estimated.

The most commonly ordered hematology test is the complete blood count (CBC). It includes determination of hemoglobin, hematocrit, red blood cell count, white blood cell (WBC) count, differential WBC count, and comments about red blood cell, white blood cell and platelet morphology. To follow is a brief description of what some of these tests mean.

PLASMA CHOLESTEROL

Human blood cholesterol values tend to increase with age. The National Heart Association advises a cholesterol level below 200 mg/dl to retard Coronary Heart Disease (CHD). A diet high in saturated fat is the leading cause of high levels of blood cholesterol. HDL (High Density Lipoproteins) and LDL (low density Lipoproteins) levels are necessary to determine if a patient is at risk for CHD. Close adherence to low fat diet keeps cholesterol levels well below 200mg/dl in the majority of our patients. Normal HDL levels range from 40 mg/dl - 60 mg/dl. Levels below 35 mg/dl are considered to be a risk factor. Normal range of LDL levels should be below 130 mg/dl. Levels greater than 159 mg/dl are considered high risk factors.

~~Other factors such as stress, obesity, and pregnancy~~ can elevate cholesterol levels.

TRIGLYCERIDES

Triglyceride (TRG) is another name for a molecule of fat. Elevation of serum TRG's is also associated with increased risk of heart disease. Obesity and high concentration of concentrated carbohydrates in the diet tend to elevate the serum TRG concentration. This test must always be done fasting. The normal range is below 200 mg/dl. Although a diet high in saturated fat is probably the chief cause of elevation of TRG's other factors can also do the same.

HEMATOCRIT

Another test with important clinical application is the hematocrit. HEMATOCRIT is the percentage of blood that is made up of red blood cells. The average Hematocrit for males is 40-54% and 38-47% for females.

HEMOGLOBIN

Hemoglobin is composed of protein called globin and a pigment, heme, which contains iron. It constitutes about 33 percent of the cell weight. It is involved in the transport of oxygen and carbon dioxide. When the number of functional red blood cells or their hemoglobin content is below normal the condition is called anemia. Anemia has many causes lack of iron, certain amino acids and lack of vitamin B12, are but a few. Iron is needed for the oxygen-carrying part of the hemoglobin molecule. The amino acids are needed for the protein or globulin. Vitamin B12 is needed for the production of normal red blood cells.

DIFFERENTIAL COUNT

The Differential WBC count enumerates the percentage of each kind of white cell in the blood. The white cells include Neutrophils, Eosinophils, Basophils, Lymphocytes, and Monocytes. Particular attention is paid to the Neutrophils in the differential count. A high Neutrophil count may indicate an acute infection due to invading bac-

teria. An increase in the number of Monocytes generally indicate chronic infection. Eosinophils and Basophils are elevated during allergic reactions. High Lymphocyte counts suggest Antigen-antibody reactions.

BILIRUBIN

Bilirubin is a product of the hemolysis of red blood cells and the breakdown of hemoglobin. An increase in bilirubin may also be a result of liver dysfunction or obstruction of the biliary system. Because the liver is a filtering plant such things as medication and alcohol can increase liver enzymes. When an increase is noted the physician must pursue all possible causes.

SGPT & GGTP

An elevation in these two liver enzymes may mean liver dysfunction.

NEW FOODS PERMISSABLE ON DIET

FROZEN DESSERTS

Simplese Co.	Simple Pleasures Non Fat Frozen Dairy Dessert
Rhasody Farms Inc.	Rhapsody Farms NonFat Frozen Yogurt. All Flavors.
Nouvelle Ice Cream Corp.	Rich N' Slim Frozen Dairy Dessert.
Knudsen	Knudsen- Fat Free NonFat Frozen Dessert. All Flavors

CHEESE ECT.

Gamay	Cheese Smart (Cheddar, Mozzarella, Cheddar Bars)
Galaxy Cheese Co.	Formagg, All Flavors. 3 OUNCES PER SERVING.
Lite Time Dairy	Lite Time Dairy Products Cottage Cheese, Yogurt.

OTHER PRODUCTS

White Wave	Meatless Healthy Franks
Hostess	Hostess Lights
Entenmann's	Fresh Baked Cakes- Fat Free

MISCELLANEOUS OFFICE NEWS

A BIG THANK YOU

I wish to thank those of you who have contributed, and still plan to do so, for your contribution to our continuing research, as well as, continued personal interest in your care.

NEW TELEPHONE NUMBER

Our prefix has been changed from 279 to 494. After our move in August we will have the same telephone number, 503-494-8370.

NEW OFFICE

Included in this newsletter is a map to our new office. We will be in the Marquam Plaza Building, Room # 140. We have been assured of at least 3 parking spaces for our patients which will be clearly marked as parking for Dr. Swank's patients. Our mailing Address will be the same except after August it would be helpful if you would use our new mailcode MP140. Remember the office will be closed the month of August. We will be back in our new office on Tuesday, September 4th.

NEWSLETTER

We would like to remind people who receive our newsletter that it is expensive and time consuming to mail out. A donation of \$20.00 per year is most helpful in meeting this expense. If you are receiving 2 newsletters please let us know by mailing back 1 of the labels.

COD LIVER OIL

The cost of the cod liver oil is now \$15.00 if picked up in the office and \$17.50 if mailed. Please make checks payable to O.H.S.U. Foundation, Swank MS Research

ACCEPTED PUBLICATIONS

1) Swank & Dugan. **MULTIPLE SCLEROSIS: EFFECT OF LIMITING SATURATED FAT CONSUMPTION.** To appear in Lancet soon.

2) Swank, Vaden, Leckband. **CONFIRMATION OF MULTIPLE SCLEROSIS BY RED CELL ELECTROPHORETIC MOBILITY.** to appear soon in Clinical Hemorheology.

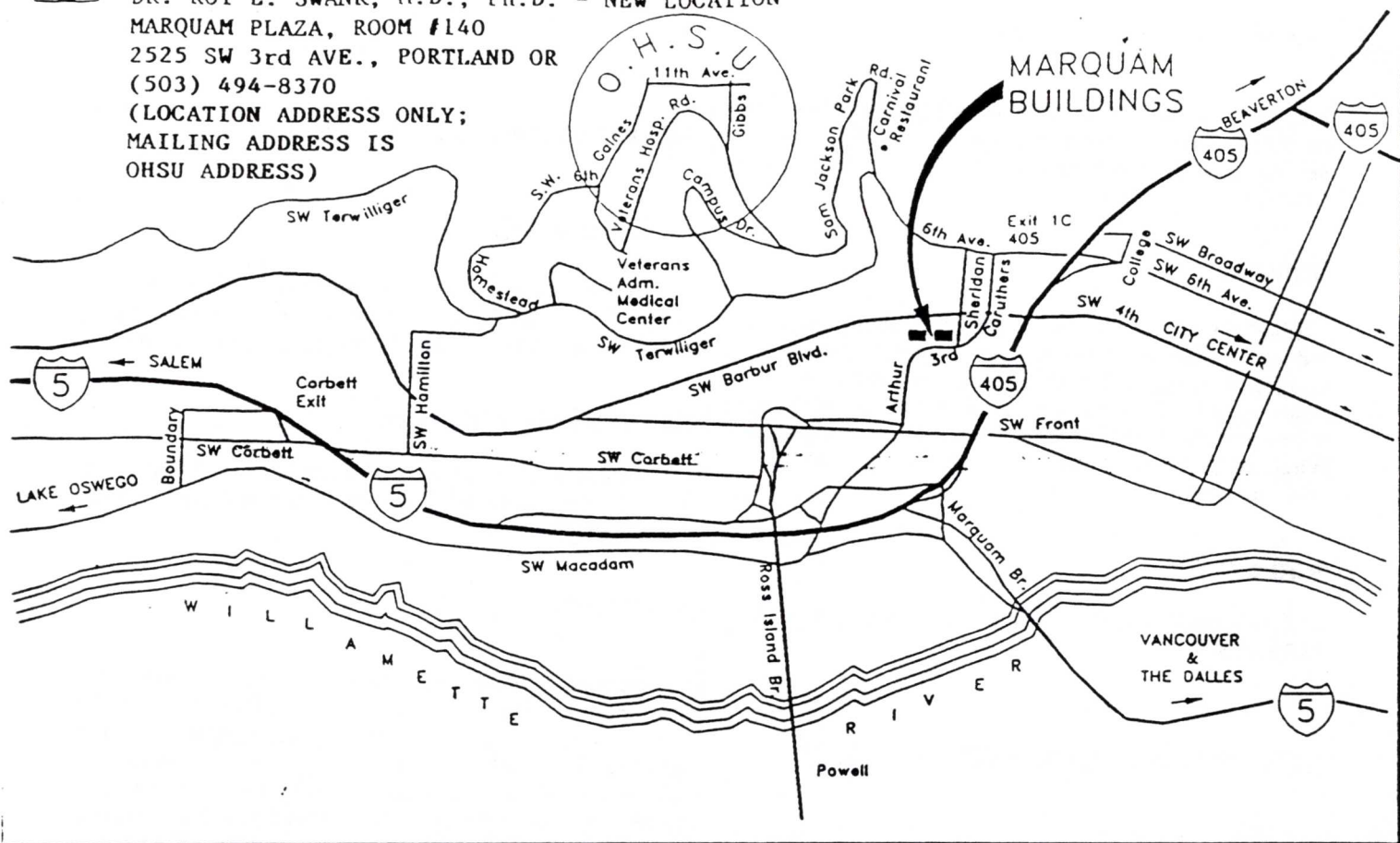
MAP TO NEW OFFICE ON BACK PAGE.

88



THE OREGON HEALTH SCIENCES UNIVERSITY

DR. ROY L. SWANK, M.D., Ph.D. - NEW LOCATION
 MARQUAM PLAZA, ROOM #140
 2525 SW 3rd AVE., PORTLAND OR
 (503) 494-8370
 (LOCATION ADDRESS ONLY;
 MAILING ADDRESS IS
 OHSU ADDRESS)



From the Northwest

Travel southeast on Hwy. 30 (St. Helens Road) toward city center, following signs to I-405. Take I-405 toward Salem; exit at S.W. Sixth (staying in right lane) and follow signs to the OHSU. After two blocks, move left and turn left on Sheridan. Follow signs to the Ross Island Bridge; after crossing Barbur Blvd. stay right and curve; turn right into the driveway for either Marquam Plaza or Marquam II.

From Southeast

Travel north on McLoughlin or west on Powell. Cross the Willamette River via the Ross Island Bridge and follow the city center signs. Stay in the left lane as Kelly turns into Arthur and then Third (past ADP building on right). The Marquam buildings will be on the left. At the first left turn lane (before Barbur Blvd.) take a left and proceed south on Third in right lane. Turn in the driveway on the right, first driveway for the Marquam Plaza, second driveway for Marquam II.

By Bus

TRI-MET bus #9 or #19 go directly past the Marquam buildings (both east and west directions).

From the North

Travel south on I-5; cross the Willamette River via the Marquam Bridge, following signs to City Center/Beaverton. Take the S.W. Sixth exit. Get in the left lane immediately and turn left on College. Turn left on Broadway (staying in the right lane) and follow signs to the OHSU. After crossing I-405 continue for two blocks, then move left and turn left on Sheridan. Follow signs to the Ross Island Bridge; after crossing Barbur Blvd., stay right and curve; turn right into the driveway for either Marquam Plaza or Marquam II.

Or, travel south on I-5; cross the Willamette River via the Fremont Bridge (I-405), following signs to City Center and S.W. Sixth. Take the S.W. Sixth exit (staying in the right lane) and follow the signs to OHSU. After two blocks, move left and turn left on Sheridan. Follow signs to the Ross Island Bridge; after crossing Barbur Blvd., stay right and curve; turn right into the driveway for either Marquam Plaza or Marquam II.

From the South

Take Corbett exit from I-5; take Corbett, left on Hamilton and right on Barbur Blvd. Go north on Barbur, past the YMCA (on left) and take a right on Sheridan and curve; turn right into the driveway for either Marquam Plaza or Marquam II.

From the East

Travel west on I-80N to the juncture with I-5. Follow I-5 south toward Salem; cross the Willamette River via the Marquam Bridge, following signs to Beaverton. Take the S.W. Sixth exit. Get in the left lane immediately and turn left on College. Turn left on Broadway (staying in the right lane) and follow signs to OHSU. After crossing I-405 continue for two blocks, then move left and turn left on Sheridan. Follow signs to the Ross Island Bridge; after crossing Barbur Blvd., stay right and curve; turn right into the driveway for either Marquam Plaza or Marquam II.

From the West

Travel east on Hwy. 26/Sunset Hwy. (staying in the right lane), following signs to Salem/The Dalles. Pass through the Vista Ridge Tunnel, following signs to I-405. Take the S.W. Sixth exit and follow signs to OHSU. After two blocks, move to the left and turn left on Sheridan. Follow signs to the Ross Island Bridge; after crossing Barbur Blvd. stay right and curve; turn right into the driveway for either Marquam Plaza or Marquam II.

OREGON HEALTH SCIENCES UNIVERSITY
**SWANK'S MULTIPLE SCEROSIS
 NEWSLETTER**



SEPTEMBER 1990

NUMBER 41

- FROM THE OFFICE OF ROY L. SWANK M.D. Ph.D.
- EDITOR: BARBARA DUGAN ASSISTANT EDITOR: BARBARA KALKHOVEN
- CONTRIBUTING EDITOR: ANTHONY J. LECKBAND

PROGRESS REPORT

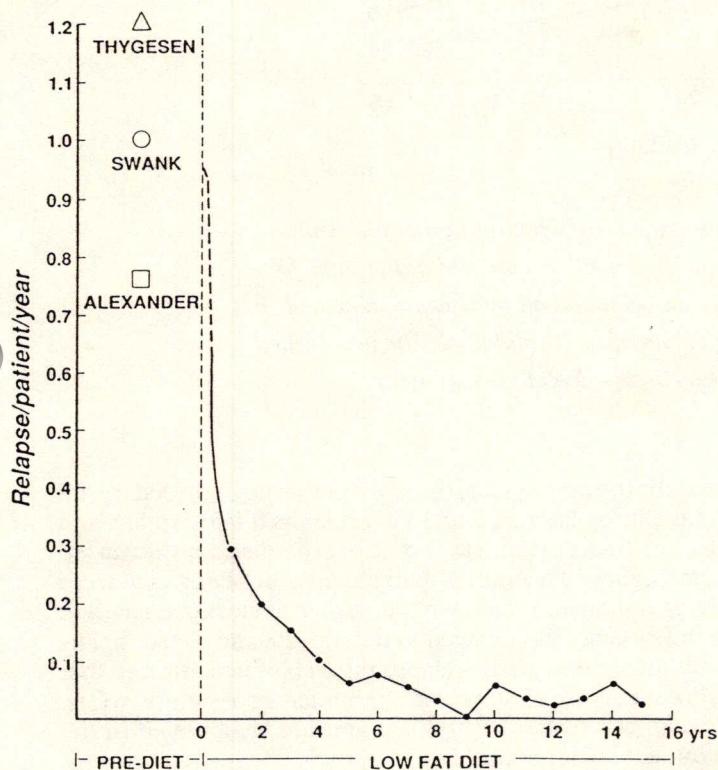


Fig 1 - Relapse rates before and during period on low fat diet. Only 118 patients who followed diet closely are included. Rates prior to diet are based on patients history. Average rates by Thygesen in Denmark (Thygesen, P. The course of disseminated sclerosis Copenhagen. Rosenhilde and Baggar, 1953) and Alexander in Boston (Alexander, L., Berkeley, A.W., Alexander, A.M. Prognosis and treatment of multiple sclerosis. JAMA. 166:1943-49,1958) are shown by appropriate symbols.

This newsletter and the following will review the progress of our studies of low fat diet and plasma infusions in MS in more detail than before. The relationship of consumed saturated fat to the disease multiple sclerosis will be reviewed in this issue, plasma infusions in the next.

I have published a number of papers during the past 40 years, the first in 1953 which showed a reduction in frequency of exacerbations as the fat intake was decreased. This was followed by a paper, in 1960 in collaboration with Dr. Bourdillon, then alone (figure 1) in 1970, and finally in 1988 in collaboration with Aagot Grimsgaard which resulted in convincing evidence that not only were the exacerbations greatly reduced in frequency, but that the death rates and disability were significantly improved. In this newsletter you can read about, and see the visual graphics supporting our concept.

SECTION I

Aagot Grimsgaard worked with me from the beginning of our low-fat diet studies. She developed the first recipes and the means by which saturated animal fats could be replaced by vegetable oils in the diet. She was vigorous in keeping patients on diet in the early 1948 to 1960 period when diets were rarely in the public eye by way of newspapers and TV shows.

In the 1988 paper (Swank & Grimsgaard, Multiple Sclerosis: the lipid relationship. Am. J. Clin. Nutri. 1988;48:1387-93.) the relationship of fat intake, measured in grams/day, was related to the death rate and to the development of disability. We also considered the influence of delayed treatment and of gender on the outcome of the patients condition. Figure 2 in this newsletter graphically

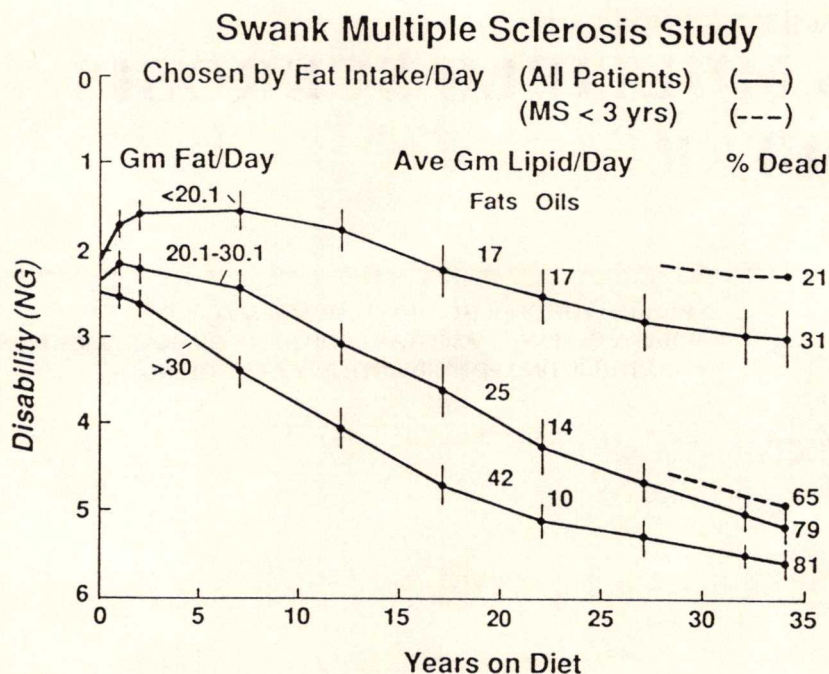


Fig. 2 - patients grouped by fat intake per day: average rate of deterioration of MS with 95% confidence limits (vertical lines) and percentage of deaths at the end of the study for three groups of patients (solid lines). The average daily fat and oil intakes are indicated above each solid line, and percentage deaths at the end of each solid line. The two dashed lines represent the 60 patients who had MS less than 3 yrs when placed on diet.

illustrates the relationship of fat intake upon the progress of the disease and the death rate. The top solid line averages the results of 70 patients all of whom consumed 20 grams of fat or less per day. The average fat intake in this group was 17.0 g/d. Thirty one percent of these patients were deceased at the end of the 34 year period. Note also the oil intake/day which was indirectly related to the deaths and deterioration. The middle solid line is for patients who consumed between 20.1 and 30.1 grams of fat per day. The average intake of this group was 25 grams/day. Seventy nine percent of these patients were deceased and the average disability was severe, on average all were bed ridden. The bottom solid line patients consumed 30.1 g/d or more per day (average 42 g/d). Eighty one percent were deceased and the disability was extreme (bed ridden) by the end of the 34 year study. It should be noted that 22% of the deaths were caused by disease other than MS such as heart disease or cancer.

Sixty of these patients were placed on diet less than 3 years after onset of MS (see dashed lines). The 2nd and 3rd groups were combined to make a large enough number to be statistically significant. Note that the percentage of deaths and the disability was less than for the entire group.

It should be clear from this graph that strict adherence to the diet and an early start on the diet is very important if patients with MS are to do well.

The need for strict adherence is shown by the middle group (20.1 to 30.1 g/d of fat) in figure 2 (solid line). Note

that for the first 7 years, those patients who exceeded the fat intake by as little as 5 to 10 g/d remained fairly stable, and during this period exacerbations of disease decreased remarkably. This misled patients into believing they were doing well, so they failed to follow diet as closely as advised. In a few years they started to deteriorate and did so rapidly without increase in the relapse rate. This fact indicates that MS patients are very sensitive or intolerant of saturated fats. It suggests that saturated fats are directly involved in the etiology (cause) of MS.

SECTION II

The final paper in this review (Swank and Dugan, Effect of low saturated fat diet in early and late cases of multiple sclerosis; *The Lancet*, 336:37-39, 1990) concentrated on the relation of initial severity of the disease and fat intake to the deterioration and death rate of our patients. Patients with minimal disability (Ng 1), moderate disability (Ng 2), and severe disability (Ng 3,4) were divided into two groups one consuming less than 20 grams of fat daily and the other consuming more than 20 g/d of fat. The rate of deterioration and of deaths were analyzed. The results are shown by 3 graphs in figure 3.

The solid lines in each graph are for all patients. The dashed lines indicate only patients who died from MS alone

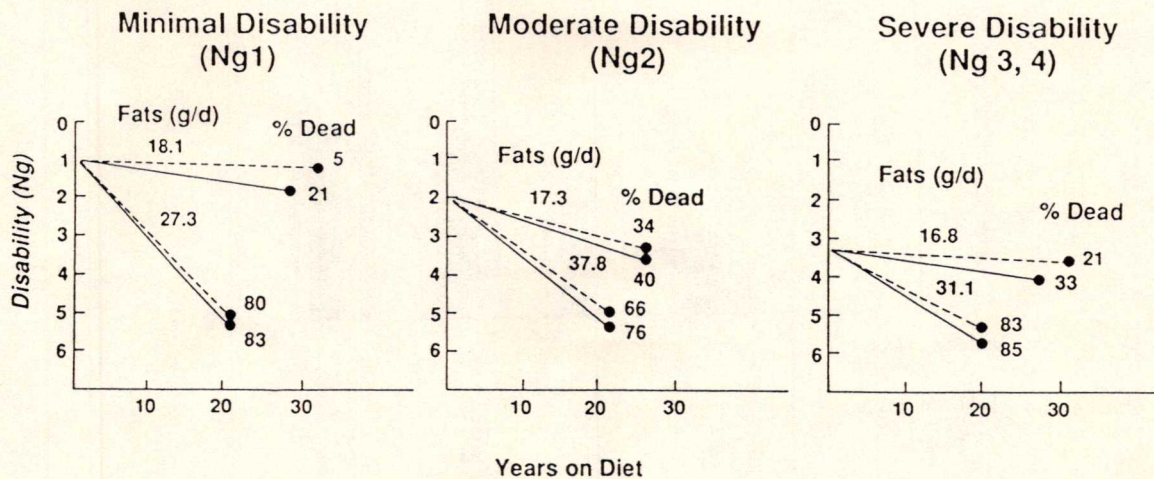


Fig. 3 - General course of MS in the minimally (Ng 1), moderately (Ng 2), and severely (Ng 3,4) disabled patients who followed or did not follow our low-diet. In each group the solid lines are for all patients in the group. The dashed lines represented those patients who only suffered from MS, those who had died from other disease were not included. The horizontal line indicates the years of disease, the verticle the neurograde. The percentage dead at the end of study, intakes of fats in grams per day are indicated.

(did not die from causes other than MS, such as Cancer, heart disease, etc). As you can see in the minimal disability group (Ng 1) only one of 19 cases died from MS or its complications 95% remained alive and were all ambulant and otherwise minimally disabled at the end of 34 years on diet. There were only 5 poor dieters in this group and 4 died from MS and one from a non MS cause. Note the extreme difference between those who consumed an average of 18.1 g.fat/day and the poor dieters who consumed an average of 27.3 g.fat/d. Examination of patients with moderate and severe disabilities show a similar yet not as dramatic differences between the good and poor dieters.

For increased details you are referred to the Lancet paper noted at the beginning of this section.

In each of the three disability groups the average worsening in disability and percentage of deaths of the poor dieters significantly exceeded those of the good dieters. The greatest difference occurred among those who entered the study with minimum disability. Statistically the differences in each group were significant (ttest $P < .0001$)

From figures 2 and 3, one can readily see that treatment with the low fat diet is most effective when started early before disability occurs. This is also shown in figure 4. Note that the disability and death rates steadily increased as the delay in starting our low fat diet increased. In other analysis it was shown that in early disease (Ng 1,2) to severe disease (Ng 3,4,5) the females tended to become disabled at a slower

rate than the males. In the severely disabled (Ng 3,4,5) the females seemed to do far better than males.

CONCLUSION

It is clear from what you have just read that several criteria must be carefully followed if MS patients are to do their best.

1. They must start the diet as soon as possible and if possible before disability has developed. In other words the diagnosis must be made as soon as possible and the diet started immediately. If the diagnosis is still in question the diet will not harm the patient. In fact it is a very healthy one and is known to reduce the blood cholesterol, give protection from heart disease, strokes, some cancers, and prevent obesity.

2. The diet must be followed carefully, consistently, and continuously. Deviation from the diet once per week exceeding 15 grams saturated fat can cause continued deterioration.

3. The patient must avoid nervous tension, and physical fatigue particularly if they continue several days or longer. Most physical activities are permitted if they are discontinued when fatigue is first noticed.

4. Changeable weather, overheating because of weather, physical activity, or hot baths should be avoided. Of course urinary and other infections which result in a rise in body

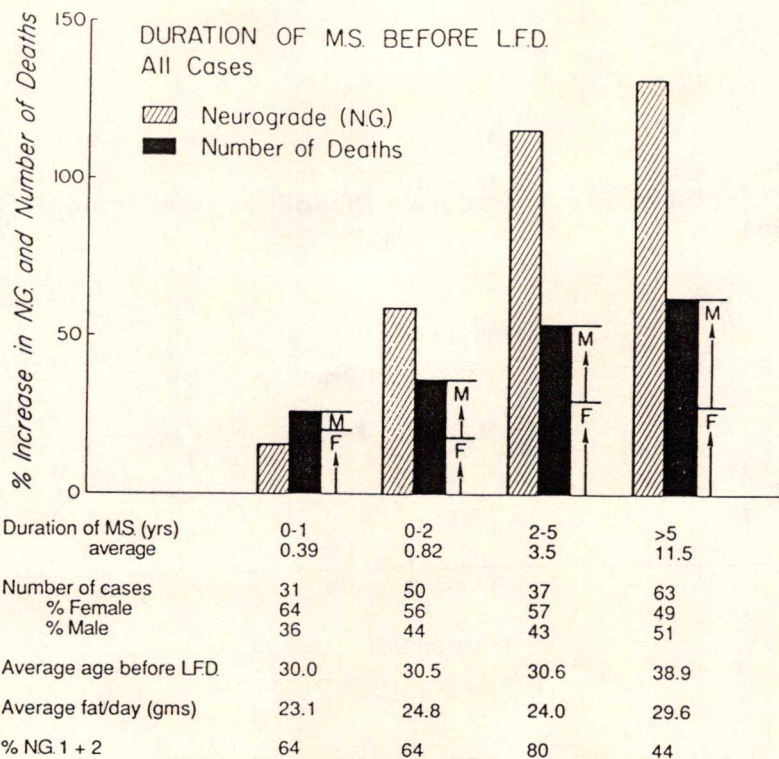


Fig. 4 - Duration of MS before low-fat diet: number of deaths and the percentage increase in disability that occurred in patients whose treatment by low-fat diet was delayed. The relative number of female and male deaths are shown to the right of the death (black) columns by vertical arrows. Patients in the 0-1 columns are included in the 0-2 columns.

temperature should be carefully watched for and treated as soon as possible.

5. Patients should also rest mid-day for 60 minutes or longer. This is highly recommended and has long, as well as, short term benefits.

6. For further details of treatment see book "The MS Diet Book" written by Swank & Dugan, published by Doubleday & Co., 1987.

PERSONALITY PLUS

Fatigue is probably the most talked about, complained about, and devastating symptom of MS. For the individual who has been used to a very active life style it is a death sentence. Personality changes do occur during these periods and we would like to remind you to go easy on the spouse and children. It is difficult for those around you to understand the short temper, teary eyes, and negative attitude. With a lot of self discipline you can avoid periods of deep fatigue and your life and your family's life will be much happier.

SOLUTION: Avoid fatigue. Yes, that's right, stop before you hit the wall. Don't exercise until you drop, don't clean the entire house in one day, don't mow one acre of lawn in one day, don't take on volunteer jobs that soon become full time employment. Although these may sound like simple reminders, they seem to be come of the most difficult

tasks a patient has to control. It is our suggestion that a nap daily, as little as 15 minutes, will restore your energy and personality. Protect yourself against fatigue. Energy is not stored with this disease it must be replenished daily by resting. Fall and Winter is just around the corner and your schedule will become even more hectic. Begin now by planning ahead. Thanksgiving and Christmas can produce many problems for the MS patient. **ASK FOR HELP AND PACE YOURSELF. !!!!**

DR. SWANK TO SPEAK AT MCDUGALL RETREAT

Dr. Roy Swank will be the featured speaker at the Third McDougall Multiple Sclerosis Retreat to be held at St. Helena Hospital & Health Center located in the beautiful Napa Valley. This six-day retreat, dedicated only to MS patients, will be held October 21-26 and will include lectures, group discussions, exercise sessions (gym and pool), and stress management classes. Participants will stay in spacious Health Center rooms and dine at a low-fat buffet. The entire stay will be supervised by Dr. John McDougall and the McDougall Program Staff. For more information call the McDougall program at 1(800) 862-7575 (CA) or 1(800) 358-9195 (outside CA).

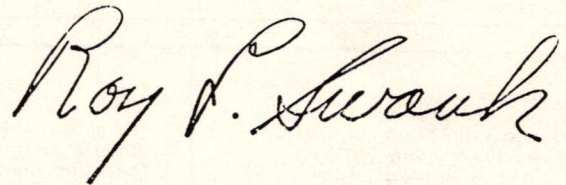
Now that you have finished reading my progress report you are in a position to form an idea of what the low-fat diet means to MS patients and their families. It is clear though that our job is still unfinished. Although the patients treated early do extremely well, they still suffer periodic fatigue, and those treated late will still have disabilities as well as severe fatigue and severe loss of energy.

We know from our experience that much of the fatigue, loss of energy, and general weakness can be improved by infusions of fresh frozen plasma; especially in patients on the low-fat diet.

We are committed to continued work on the plasma and in our next newsletter we will give you an outline of what we have done and where we are going. To continue this work we will need generous financial assistance not only now; but on a continuing or ongoing basis.

I hope that those of you able to do so will contribute to our work. In response we promise an energetic drive toward solution of our problem.

Sincerely, Roy L. Swank



I (we) want to support Dr. Swank's research. Enclosed is our check in the following amount:

\$20___ \$ 50___ \$75___ \$100___ \$250___ \$500___ \$1000___ Other___

NAME: _____

Mail to:

Roy L Swank, M.D. Ph.D.

ADDRESS: _____

Dept. of Neurology - MP 140

Please make checks payable to:
O.H.S.U. FOUNDATION -
Swank MS Research

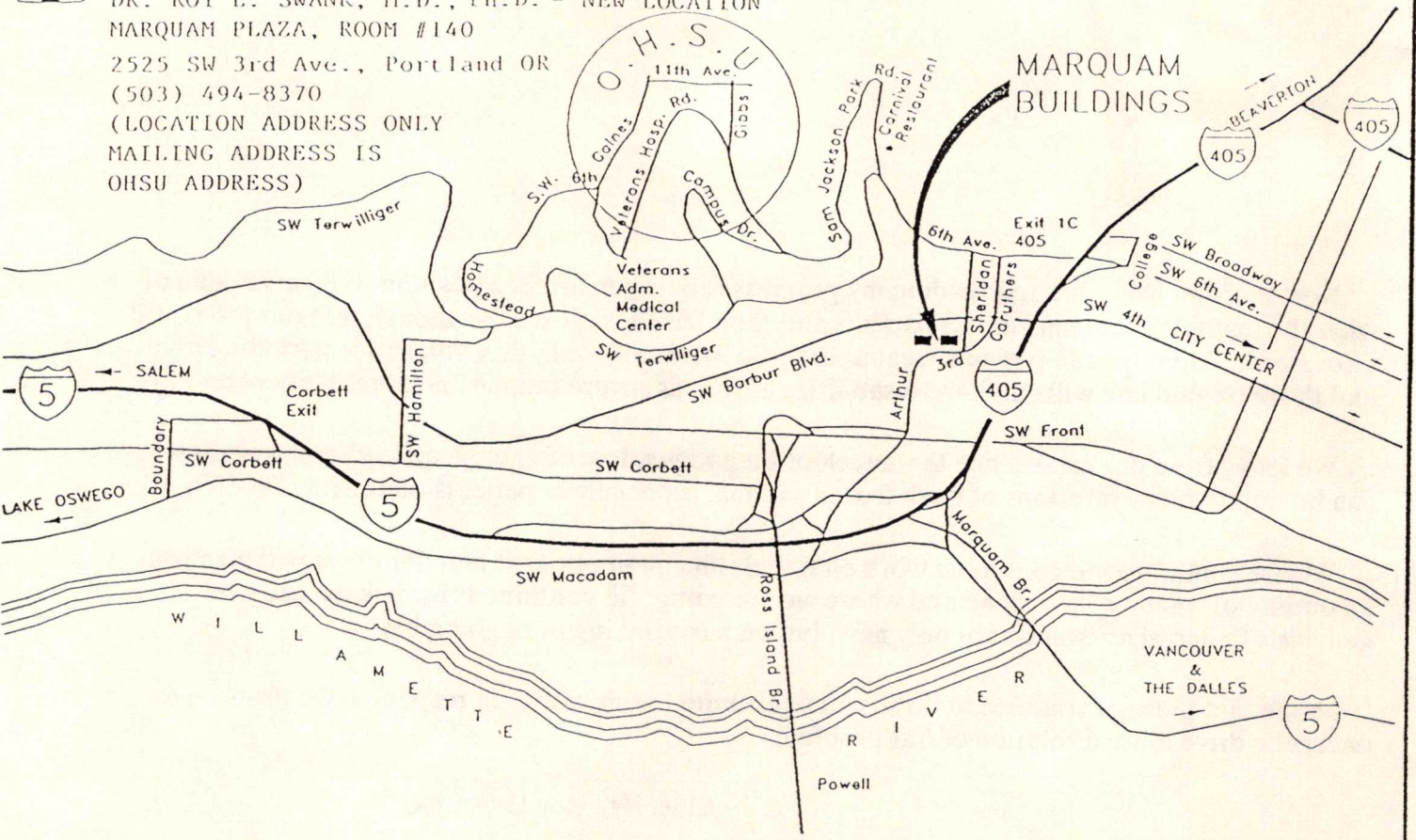
3181 SW Sam Jackson Park Rd

Portland, Oregon 97201



THE OREGON HEALTH SCIENCES UNIVERSITY

DR. ROY L. SWANK, M.D., Ph.D. - NEW LOCATION
 MARQUAM PLAZA, ROOM #140
 2525 SW 3rd Ave., Portland OR
 (503) 494-8370
 (LOCATION ADDRESS ONLY
 MAILING ADDRESS IS
 OHSU ADDRESS)



From the Northwest

Travel southeast on Hwy. 30 (St. Helens Road) toward city center, following signs to I-405. Take I-405 toward Salem; exit at S.W. Sixth (staying in right lane) and follow signs to the OHSU. After two blocks, move left and turn left on Sheridan. Follow signs to the Ross Island Bridge; after crossing Barbur Blvd. stay right and curve; turn right into the driveway for either Marquam Plaza or Marquam II.

From Southeast

Travel north on McLoughlin or west on Powell. Cross the Willamette River via the Ross Island Bridge and follow the city center signs. Stay in the left lane as Kelly turns into Arthur and then Third (past ADP building on right). The Marquam buildings will be on the left. At the first left turn lane (before Barbur Blvd.) take a left and proceed south on Third in right lane. Turn in the driveway on the right, first driveway for the Marquam Plaza, second driveway for Marquam II.

By Bus

TRI-MET bus #9 or #19 go directly past the Marquam buildings (both east and west directions).

From the North

Travel south on I-5; cross the Willamette River via the Marquam Bridge, following signs to City Center/Beaverton. Take the S.W. Sixth exit. Get in the left lane immediately and turn left on College. Turn left on Broadway (staying in the right lane) and follow signs to the OHSU. After crossing I-405 continue for two blocks, then move left and turn left on Sheridan. Follow signs to the Ross Island Bridge; after crossing Barbur Blvd., stay right and curve; turn right into the driveway for either Marquam Plaza or Marquam II.

Or, travel south on I-5; cross the Willamette River via the Fremont Bridge (I-405), following signs to City Center and S.W. Sixth. Take the S.W. Sixth exit (staying in the right lane) and follow the signs to OHSU. After two blocks, move left and turn left on Sheridan. Follow signs to the Ross Island Bridge; after crossing Barbur Blvd., stay right and curve; turn right into the driveway for either Marquam Plaza or Marquam II.

From the South

Take Corbett exit from I-5; take Corbett, left on Hamilton and right on Barbur Blvd. Go north on Barbur, past the YMCA (on left) and take a right on Sheridan and curve; turn right into the driveway for either Marquam Plaza or Marquam II.

From the East

Travel west on I-80N to the juncture with I-5. Follow I-5 south toward Salem; cross the Willamette River via the Marquam Bridge, following signs to Beaverton. Take the S.W. Sixth exit. Get in the left lane immediately and turn left on College. Turn left on Broadway (staying in the right lane) and follow signs to OHSU. After crossing I-405 continue for two blocks, then move left and turn left on Sheridan. Follow signs to the Ross Island Bridge; after crossing Barbur Blvd., stay right and curve; turn right into the driveway for either Marquam Plaza or Marquam II.

From the West

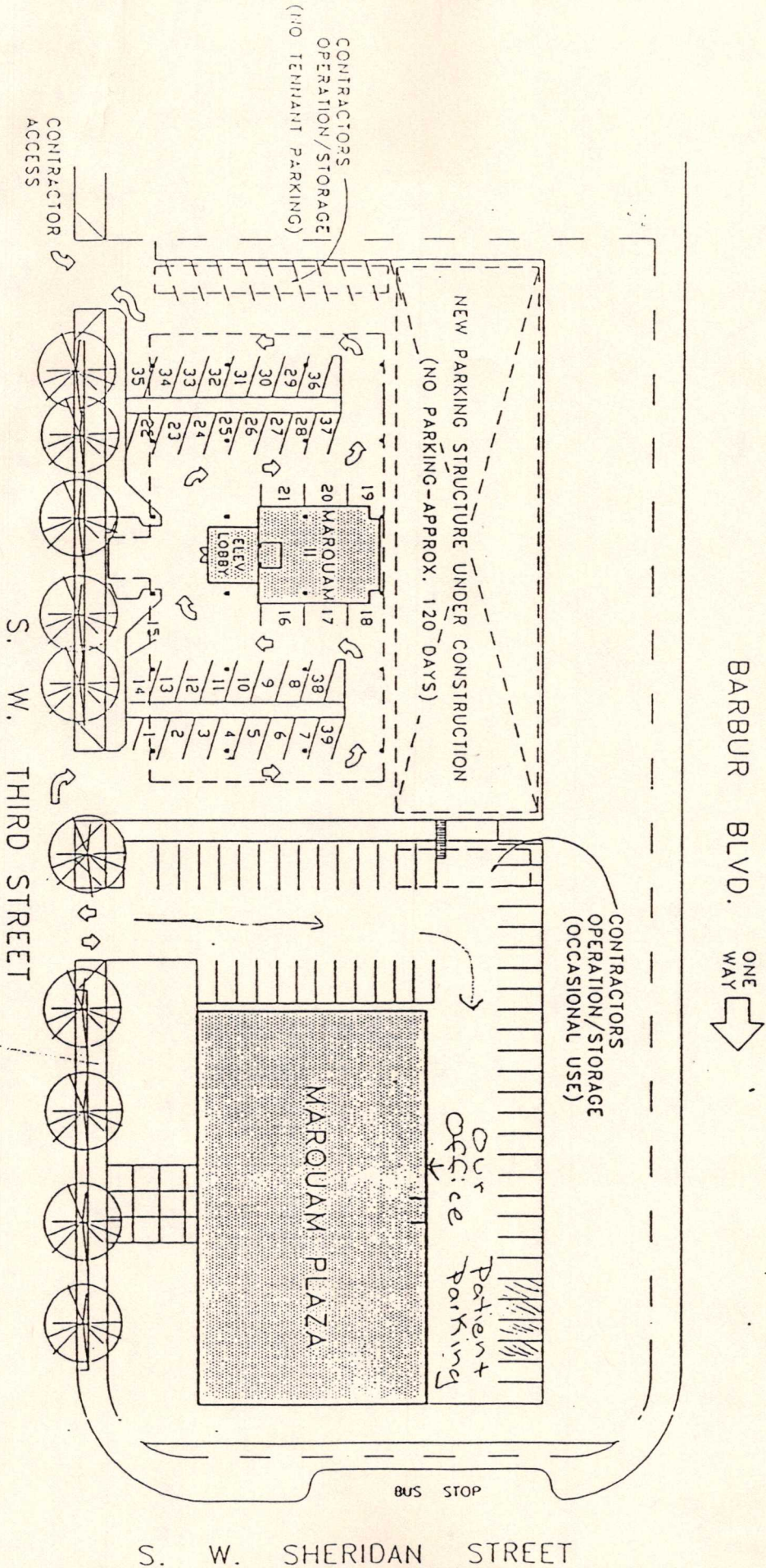
Travel east on Hwy. 26/Sunset Hwy. (staying in the right lane), following signs to Salem/The Dalles. Pass through the Vista Ridge Tunnel, following signs to I-405. Take the S.W. Sixth exit and follow signs to OHSU. After two blocks, move to the left and turn left on Sheridan. Follow signs to the Ross Island Bridge; after crossing Barbur Blvd. stay right and curve; turn right into the driveway for either Marquam Plaza or Marquam II.

DETAILED MAP OF PARKING
ON BACK

OVER

OFFICE ADDRESS: 2523 SW 3rd Ave
MARQUAM PLAZA, ROOM 1140
PORTLAND, OR

MAILING ADDRESS: DR. ROY L. SWANK, H.D., Ph.D.
OHSU, HP140
3181 SW SAM JACKSON PARK RD
PORTLAND, OR 97201



Oregon Health Sciences University
Roy L. Swank, M.D., Ph.D.
Department of Neurology
3181 S.W. Sam Jackson Park Road
Portland, OR 97201

Non-Profit Organization
U.S. POSTAGE PAID
Portland, Oregon
Permit No. 722

SWANK MULTIPLE SCLEROSIS NEWSLETTER

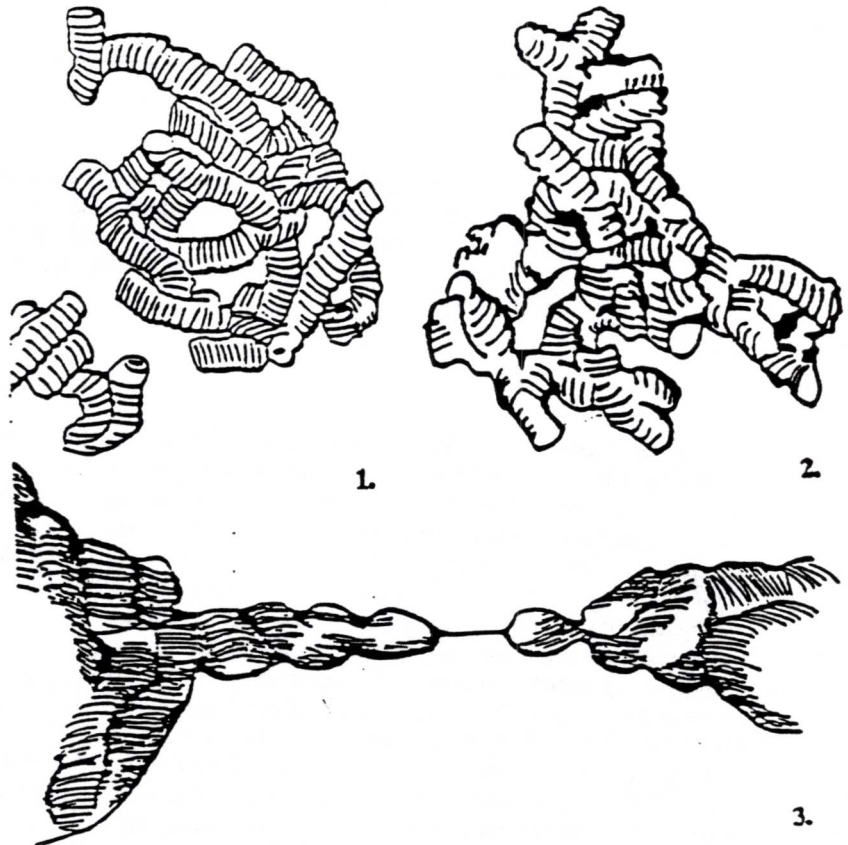


- FROM THE OFFICE OF ROY L. SWANK M.D. Ph.D.
- EDITOR: BARBARA DUGAN ASSISTANT EDITOR: BARBARA KALKHOVEN
- CONTRIBUTING EDITOR: ANTHONY J. LECKBAND

PROGRESS REPORT II

Figure 1

Normal blood smear showing rouleaux formation of red cells. 2. To the right is abnormal red cells after fat meals showing beginning aggregation and deformation of red cells. 3. Note the marked aggregation and deformity of red cells and the thin strand of tissue joining the two aggregates together. This illustrates the adhesiveness of red cells for one another. (From Swank, *Changes in the blood produced by fat meals and heparin. Am.J. Physiol.* 1951, 164:798-811.)



You will remember our first progress report in the last newsletter which outlined progress concerning the low fat diet. The present communication reviews our progress and our future plans for the plasma. Work on the plasma was started early in 1952, was interrupted for nearly 30 years, and finally taken up again. Our plan is to continue work on the plasma factor

Section A

In 1948, a review of literature suggested that fat consumption might be a factor in MS. This idea was subsequently strengthened by a study of diet and the low coastal and high inland incidence of MS in Norway which in turn stimulated a study of the effect of various fats and oils, on the circulation in humans, dogs, hamsters and rabbits. Subsequent studies were as follows.

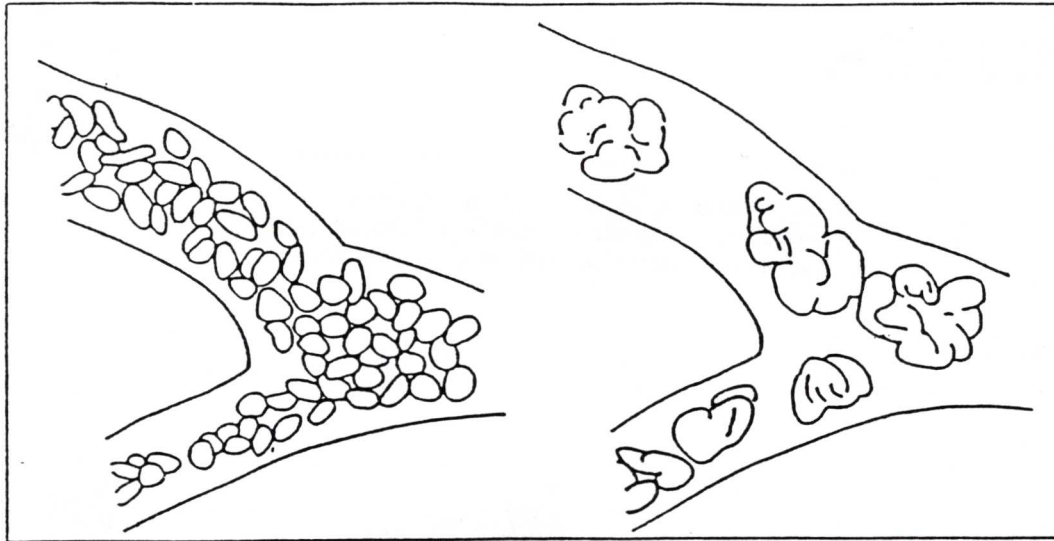


Figure 2 - Normal circulation in cheek pouch of hamster showing small vein with normal appearing and dispersed red cells, and to the right aggregated red cells in the same blood vessel after butter fat meal (From Cullen & Swank, Intravascular aggregation & adhesiveness of blood elements associated with alimentary lipemia, Circulation 1954;9:335-54)

Research using the golden hamster revealed that several hours following fat meals the red blood cells and fat globules (chylomicra) began to clump, and 4 to 6 hours after the meal the clumping had become so severe that it occluded many capillaries. The circulation of the cheek pouch of the hamster slowed and in places stopped, and oxygen availability in the brain was reduced. Five to six hours later the circulation recovered. Saturated fat, such as butter fats, caused the greatest changes in the circulation and oxygen levels in the brain. Oils, proteins, and carbohydrates caused very little change. Subsequent studies of the effects of red cell aggregates (emboli) and of small paraffin particles (emboli) on the blood-brain-barrier of the circulation of the brain were undertaken. It was observed that in many areas the barrier was damaged or broken. The injected dye, trypan blue, leaked from the blood stream thru the damaged blood-brain-barrier into the tissues of the brain. It had been shown in 1949 by Broman and confirmed recently that in MS the blood-brain-barrier is frequently damaged. This allows substances in the blood to penetrate through the vessel wall to brain cells. Normally this is prevented by a normal blood-brain-barrier. I became impressed that the fats which were transported as small fat globules in the blood, must be enveloped by special proteins which held both the fat globules and red cells in an emulsified state. The addition of too much fat to the bloodstream after a fat meal led to

competition for this particular protein, and the fat globules and red blood cells became inadequately supplied. Both then aggregated (clumped), and tended to obstruct the circulation. If the clumping was severe the blood-brain-barrier was damaged and the blood penetrated the blood vessel walls and made contact with nerve tissues.

Section B

These observations suggested that a direct study of the plasma might be productive. In 1952, in collaboration with Professor Quastel at McGill University, we undertook a study of plasma proteins, using the two dimensional paper chromatography method. This separated many of the plasma proteins from one another, and showed that in MS patients the proteins probably differ from normal. The methods available at that time for protein identification were inadequate to pursue this lead further.

Nearly thirty years later, in collaboration with Dr. Seaman's laboratory at the O.H.S.U., the plasma work was begun again. First we confirmed that the red cell electrophoretic mobility test was reliable for MS. This test had been developed in England by Field and Joyce, and had shown that the electrical charge on MS red cells was reduced. We then found that by incubating normal red cells

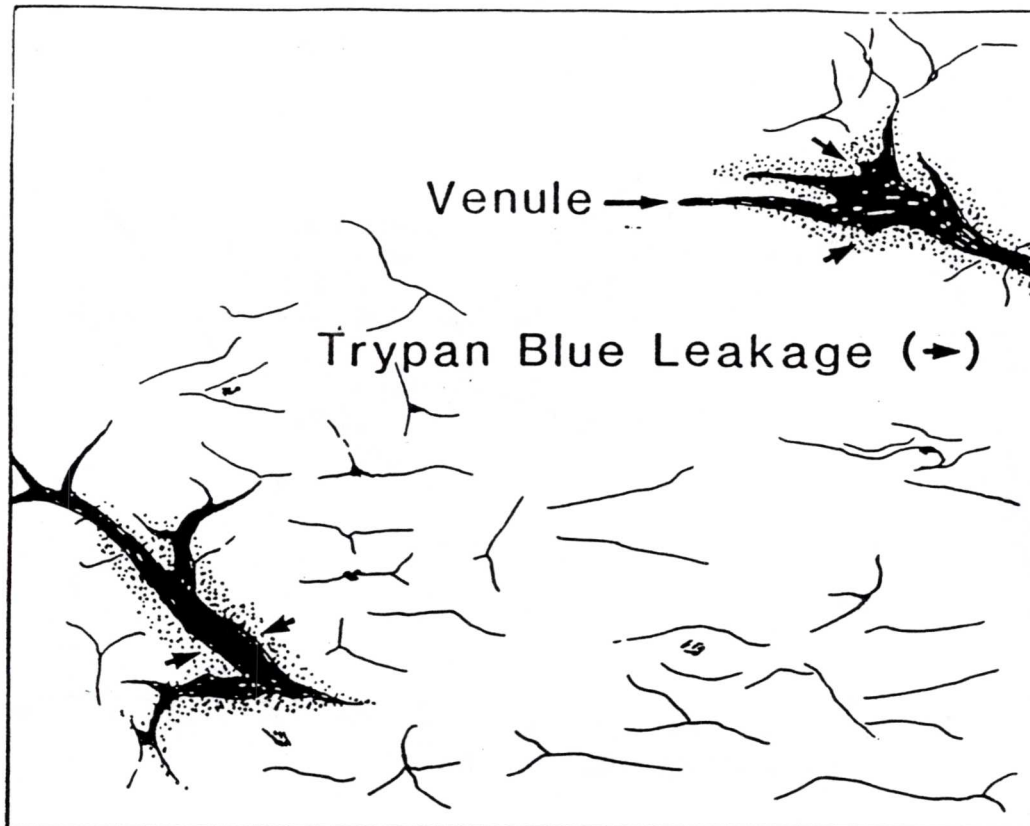


Figure 3 - Venules (small veins) of hamsters showing trypan blue dye as stippling outside the blood vessel due to injury to the blood-brain barrier after large butter fat meal (From Cullen & Swank, Intravascular aggregation and adhesiveness of blood elements associated with elementary dipernia, etc. Circulation 1954; 9:335-54)

in MS plasma a result compatible with MS resulted, and MS red cells incubated in normal plasma gave a result seen in normal subjects. This indicated that the plasma caused the slowing of mobility of the red cells in MS, instead of the red cell membrane as previously thought. This belief was strengthened when it was shown that microscopic sized plastic (polyethylene) beads in MS plasma were less mobile than when incubated in normal plasma. These results strengthened our belief that MS plasma differed from normal.

Section C

Finally, in collaboration with Dr. Peetoom, of the Portland Red Cross Bloodbank we conducted a study in which MS patients were infused with normal plasma. The slow mobility of the patients' red cells became normal, and the clinical state of the MS improved. Our studies showed that only plasma proteins with molecular weights less than 100,000 Dalton improved MS patients. The larger protein molecules produced fatigue and somnolence and no change in the mobility of the red cells, nor improvement in the neurological state of the patient.

Section D

At this point allow me to digress back to 1950-52 at the Montreal Neurological Institute. Professor Primrose, Head of Obstetrics and Gynecology, at McGill University told me that many MS patients after delivery or operation had severe exacerbations. I suggested that he transfuse patients with 1 or 2 units of normal whole blood immediately after delivery or operation. This suggestion was based on a report by Alexander et al that patients benefited from blood transfusions. Primrose's patients were also benefited by the blood. Instead of their MS exacerbating, they recovered rapidly and dramatically, much to Professor Primrose's satisfaction. Since then we have advised transfusions of whole blood or plasma to MS patients after delivery and operations. The results have been most gratifying.

Section E

About 1981, after our transfusion experiences, we began to actively infuse plasma into the few patients on diet who

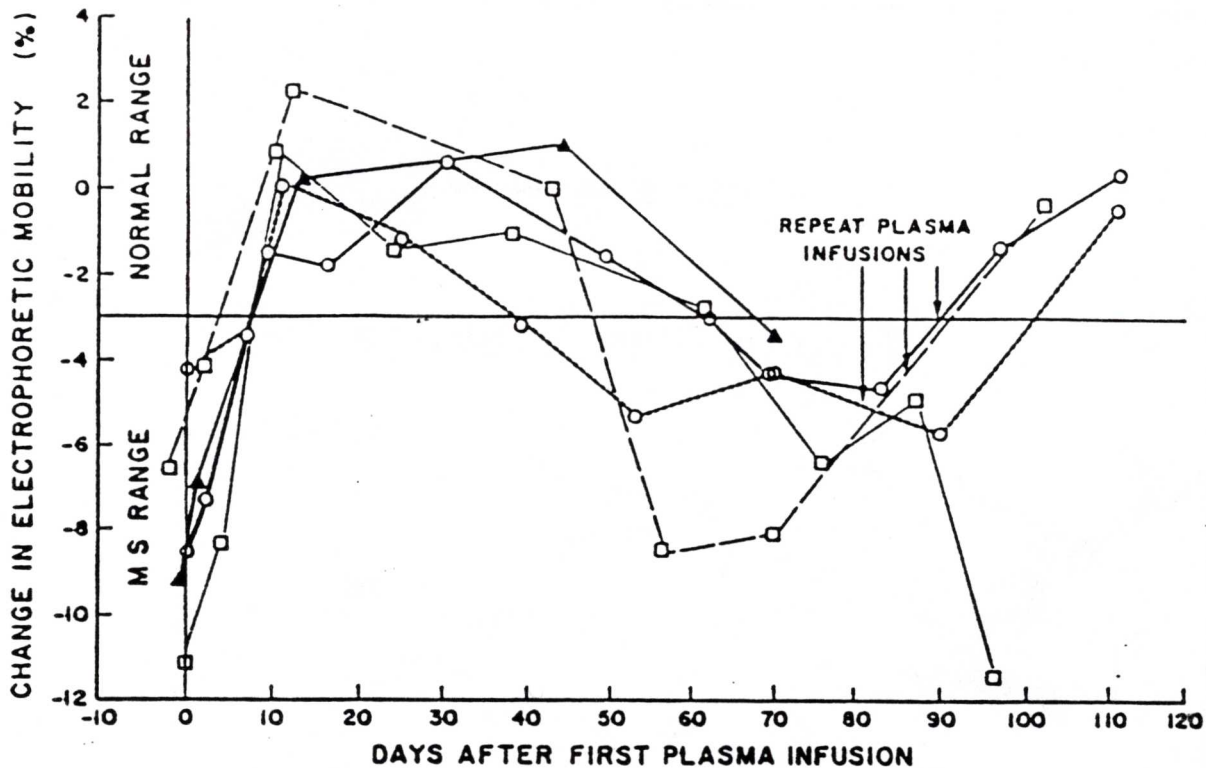


Figure 4 - Abnormal red cell mobility tests in MS patients at (left of illustration). After infusions of normal plasma mobility test results return to normal for average of about 50 days, then slow down to MS' pace. Re-infusion returned tests to normal range. Clinical state of patients returned to pre-exacerbation state after infusions (From Swank, Pectoom, et al Plasma in MS a possible abnormality. *Plasma Ther. Transfus. Technol.* 1983; 4:301-311)

failed to be satisfactorily free of exacerbation. In 1985 several cases developed hepatitis after infusion and we discontinued infusing patients for about a year. We then began using plasma infusions after a small change in the procedure. The patients receiving plasma chose their own donors to protect against hepatitis and Aids virus. Since then we have had no further cases of hepatitis. In addition to periodic infusions because of exacerbations, we have also infused a group of patients at regular intervals to maintain their well being and energy. Many of these patients are working full time. This maintenance program has worked very well and it has been successful in a number of cases for 5 to 7 years.

Section F

Almost 2 years ago Roy Garvin came to see me. He wanted to talk about research in MS. He was, I believe, contemplating work on the autoimmunity theory, but was yet undecided. I described what we were doing and hoped to do, which was considerably different from the plan he had in mind. A week or so later he returned and said he would like to work with me. I explained to him that I could pay him

a modest salary, but that I had no laboratory at the time for him to work in. He thought he could manage this by working at odd hours in a friend's laboratory. This was the beginning.

Our young enthusiast borrowed equipment to get started, and in the course of about 6 months began to get results which were acceptable, but the limited time during which he could work was discouraging.

About this time a patient from Texas donated to the Foundation a substantial amount of money for my use in MS research. This made it possible to rent a laboratory bench at a local hospital, buy the equipment, chemicals, etc. which were needed. It was now possible to make plans for a complete year with adequate space and equipment. Greatly improved techniques resulted. By years end an unusual or abnormal protein in the blood of MS cases was disclosed which was not found in the blood of normal controls nor in patients with other neurological diseases.

An abstract of his work was presented to the American Physiological Society in Washington D.C. in April of 1990. A more complete paper is being prepared for publication.

Roy is continuing his work in London at the Charing Cross Hospital of the University of London, in the Department of Chemical Pathology under Professor Fleck. Through your donations we will be able to continue the MS studies started 40 years ago in Montreal, and continued here in Portland, and now in London. I will keep in contact with Roy by telephone and fax, and by periodic visits to London, the first visit to take place in October of this year.

Financial support for our work including Roy's in London is in place for this year, but funds must be raised so that we can continue our work next year, starting Jan. 1, 1991.

I feel that if our present work on the plasma can be reproduced in London and in other laboratories, that we may have an explanation of why patients with MS are so sensitive to saturated fats. This would be a step forward in clarifying the cause of the disease, and the possibility emer-

You have had the opportunity to read and contemplate both of our progress newsletters. Briefly they show that patients with MS are very sensitive or intolerant of saturated animal fats. No such sensitivity exists, however, for vegetable or fish oils which are fluid at cool room or refrigerated temperatures. As a result patients can prevent advancing disability by consuming a diet containing a very low content of saturated fat. At least 90% of our MS patients were significantly benefited by consuming less than 20 grams of saturated fat per day, and 95% of those placed on the diet before the onset of disability forestalled development of further disability from MS for more than 30 years.

In addition we have shown that there is something in normal plasma, presumably a protein, which when infused, temporarily benefits MS patients suffering from activity of the disease.

There is left the problem of whether abnormal protein in MS plasma is related to the clinical disease and if it is, how. The solution of this problem remains our goal. We cannot promise success, but we can promise an all-out drive for its solution.

The task will not be accomplished without financial help from you. We ask those of you able and willing to contribute generously to the Oregon Health Sciences University Foundation for research in Multiple Sclerosis by Roy L. Swank. The card and envelope are enclosed to assist you to make your contribution.



A REMINDER:

Fall is here and winter is not far away. Remember to avoid getting chilled, wear appropriate clothing, and avoid getting chilled at night. If you have aching muscles and joints sleep in sweat pants. This has been the best of all treatments for the aching that occurs in the winter.

Thanksgiving and Christmas are just around the corner. Take it easy and avoid overdoing at these times. Also avoid overeating (especially the good things) at this time. Take your daily nap, pace yourself when shopping for Christmas, and when tired go to bed for a day or so.

Be sure you sleep regularly. If necessary you may take a mild sedative to prevent those long sleepless nights.

Enjoy the season, but do it at a pace you can easily tolerate. If fatigue and nervousness develops you are apt to be deeply fatigued for weeks after the New Year.

May we all wish you a Merry Xmas, and Happy & prosperous New Year.

*Roy L. Swank
Barbara Dugan
Barbara Kalkhoven
Anthony Leckband*