

13. Mental Nursing and the trained nurse—Agnes Bugge—Nyköping Sg.
14. How can the interest for nursing be aroused among young women—
Agda Meyerson—Stockholm.
15. Miscellaneous.

During the meeting we derived much pleasure and information from the many wonderfully arranged excursions and parties. Among them was a visit to the very large 2,000 bed Ullevaal Hospital where, after being conducted through the hospital we enjoyed a delightful garden party.

The Red Cross Society entertained at luncheon about 300 of the guests in their very charming nurses' school and we were shown through the Red Cross Hospital which in its completeness efficiency and charm is a model in every way.

The interesting visit to the Freia Chocolate Factory and the delicious luncheon served in the beautiful dining hall, the exceedingly enjoyable luncheon given by the Norwegian Nurses Association and the "Feast" at the "Frognersaeteren" were some of our pleasures.

The King and Queen entertained at tea about fifty of the guests and we could then well understand the devotion of the Norwegians to their very charming and interesting rulers.

It seemed particularly appropriate that the Conference was begun the first night in a quaint old church over three hundred years old, with a most impressive concert. To see about 1,800 nurses, almost all in the uniform of their profession, collected in the wonderful old church, was most stirring, and that the meeting was closed with a whole day's wonderful auto ride, in over 200 automobiles loaned to Norwegian Nurses Association for the purpose of seeing interesting sights and seeing Tuberculosis Hospitals, Child Welfare work and Open-air schools. Never can we forget the beauties of Norway, the hospitality of the people and the genuine sincerity and graciousness of the Norwegian Nurses.

THE ESSENTIAL POINTS IN THE TREATMENT OF DIABETES WITH INSULIN.

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In the treatment of diabetes, there are three objects to be attained.

1. The patient should be kept continuously free from sugar in the urine and the blood sugar should be normal.
2. The patient should be kept continually free from acidosis.
3. The patient should be nourished as evidenced by a satisfactory weight.

These conditions may be fulfilled, in many instances, by careful dietary procedures although when a patient's tolerance is very low, continuous

bed-rest is necessary to avoid a serious loss of weight. If the disease becomes progressively worse, as it usually does in severe and untreated cases, a stage is finally reached when a patient can no longer be kept free from sugar and acidosis even if the most careful attention is paid to the diet and the patient is kept continuously in bed.

Many patients wait too long before beginning careful, dietetic management and specialists in the treatment of this disease are therefore not given a fair chance to do the best work. Dr. Joslin has collected the statistics showing the advantages of careful treatment. Between the years 1814 and 1914, the death rate from diabetes in patients who were treated in the best hospitals was 28 per 100, per year. The year 1914, marked a significant advance in the dietary treatment. The principles outlined in the first paragraph were carefully adhered to. In patients so treated, the death rate has fallen to 4 per 100, per year.

By the use of Insulin, the death rate from diabetes may be reduced to zero and patients who would otherwise remain chronic invalids may be restored to health by ample diets in proportion as this specific extract becomes available. It is not a cure for diabetes. Patients will need to exercise greater care than ever with their diets but since these diets will be ample for their needs, they will be fully repaid for the additional efforts.

In the treatment of diabetes with Insulin, there are four conditions that that should be satisfied.

1. The sugar-burning, or utilizing power of the Insulin in grams per cubic centimeter should be known.
2. The patient's natural tolerance should be determined in grams of sugar-formers.
3. The exact value of the proposed diet should be known.
4. The dosage of Insulin may then be adjusted to make up the difference between the sugar-formers of the proposed diet and those of the patient's natural tolerance.

The sugar-formers of the diet designated by "G" are 100 per cent. of the carbohydrate, 58 per cent. of the protein and 10 per cent. of the fat. It has long been known that all starches are changed into sugar during the process of digestion. When the protein molecule is digested, it is split into proteoses, peptones and eventually into amino acids. Some of the amino acids may be changed into sugar while others may be changed into fatty bodies. The neutral fats are the glycerolesters of fatty acids. Glycerine is a sugar-former. The reduction of food values and tolerances to the common denominator sugar-formers very materially simplifies the calculations.

1. The sugar-burning or utilizing power of the Insulin should be accurately known. Eli Lilly's Iletin is evaluated in rabbit units. Their units have a very constant value since they use between 300 and 400 rabbits in the

standardization of each lot. In our experience, each unit is worth a little more than one gram of sugar-metabolizing power. Their H-20 product which indicates 20 rabbit units in each cc. has a sugar-metabolizing power of 25 grams.

2. The patient's tolerance may be determined by diet alone or by diet *plus* Insulin. When diet alone is used, the patient is desugarized by partial starvation. When sugar-free, diet additions are gradually made. A diet is eventually found upon which the patient can remain continuously free from sugar in the urine and with a normal blood sugar. Suppose such a diet contains 35 grams of carbohydrate, 38 grams of protein and 83 grams of fat. The sugar-formers of such a diet are 100 per cent. of 35, *plus* 58 per cent. of 38, *plus* 10 per cent. of 83, or 35 *plus* 22.04 *plus* 8.3 or 65.34 grams. We would say that such a patient has a natural tolerance of 65 grams of sugar-formers.

In the terminal stages of diabetes, patients do not endure starvation well both because of the existing acidosis and their already marked emaciated condition. Many of them cannot be desugarized by any dietary procedure since their natural tolerances are too low to permit of even bed-rest maintenance diets. In such cases tolerances may be determined by diet *plus* Insulin. In the acidosis is not too severe, a patient may be given a bed-rest maintenance diet similar to the above which contains a little more than 1,000 calories, with 65 grams of sugar-formers. Small doses of Insulin are given at first. The Insulin is gradually increased until the patient is continuously free from sugar. Suppose that it requires 60 grams of assistance in the form of Insulin to carry the above diet. The patient's natural tolerance would then be 65 less 60 or 5 grams of sugar-formers.

If the patient has a severe acidosis no attempt is made to measure the patient until the acidosis is controlled. We control the acidosis by giving the patient a diet rich in carbohydrate, low in protein and as free as possible from fat, such as an oatmeal, skimmed milk diet using comparatively large doses of Insulin which as it metabolises the carbohydrate will in turn metabolize the fat and thus dissipate the acidosis.

3. The exact value of the purposed diet should be known. We consider 80 to 100 grams of protein as ample for the needs of an adult. In adjusting the fat we have followed the formula of Woodyatt's optimal diets, never letting the fat actually oxidized, exceed two times the carbohydrate *plus* one half of the protein. Following this plan, a diet "G" of 120 will carry a 2,000 calorie diet.

The Adjustment of the Dose.

4. Suppose that the natural tolerance of a patient as determined either by diet, or by diet *plus* Insulin, is found to be 65. Suppose that the proposed diet contains 133 grams of sugar-formers. The patient will need 133 less 65 or 68 grams of assistance. Sixty-eight divided by 25 will then equal the number of cc. of the Lilly Uletin required or 2.7 cc. In our experience, we have found that in the majority of patients, with the equal distribution of food between the three meals of the day, that five-eighths

of the total dose should be given before breakfast and three-eighths before supper. In this instance we would give 1.7 cc. before breakfast and 1 cc. before Supper.

The Symptoms and Treatment of Overdosage with Insulin.

When a rabbit is given an excessive dose of Insulin the blood sugar rapidly falls. When it reaches about .04 per cent., convulsions occur which are promptly relieved by the administration of glucose. These convulsions are probably due to osmotic changes incident of the low blood sugar. Patients may also become too sugar-free from an overdose of Insulin. This may occur from unfamiliarity with the drug. It occurred with us more frequently in the past when the strength of the Insulin was not standardised as well as it is now, especially, as with improved methods of preparation, we were making more potent extracts. It may occur if a patient's tolerance is unknown, and if his diet is not carefully estimated, when it would be impossible to properly adjust the dose, even if the value of the Insulin were accurately known. Overdosage with Insulin excusably occurs in the first few weeks of treatment when, by keeping the patient continuously free from acidosis and urinary sugar, his tolerance usually grows very rapidly. Under these conditions the symptoms overdosage are usually mild and easily treated if the patient is taught to recognize them early.

The Symptoms of Overdosage.

1. *Hunger*: As a patient's blood sugar falls, he usually experiences a keen appetite. This is not a very reliable symptom because nearly all diabetic patients are notoriously hungry.

2. *Slow Mentality*: A patient complains that he cannot think well or concentrate on any one thing.

3. *Extreme Weakness*: This is probably the most reliable early symptom. When a patient is metabolizing an ample net diet he should feel well and strong, but as he is overdosed with Insulin a feeling of weakness comes on. Sometimes patients describe this as a dizzy feeling.

4. *Rapid Pulse and Respiration*: The pulse is usually weak and the respiration rapid.

5. *Visual Disturbances*: The patient complains of an inability to read due to double vision or the blurring of the print. He cannot see to write well. The eyes may ache and dark spots may appear before them.

6. *"Shaky Feeling"*: The word "shaky" or "the shakes" are terms that have been coined by patients to describe this sensation and, though not particularly scientific, describe the condition very well. The patient simply shakes all over. He is not cold, nor are these symptoms associated with or followed by temperature. We believe that this symptom is nature's method of causing comparatively large amounts of glycogen which has been stored in the liver and muscles to be changed into sugar and poured into the blood stream.

7. *Sweating*: The "shaky" feeling is always followed by a profuse sweat. This must be watched for, especially in new patients, since it is a very reliable symptom.

8. *Unconsciousness*: If a patient has been too seriously overdosed, he may become unconscious, falling into a deep sleep from which it is impossible to rouse him until sugar has been administered. At this stage he cannot be forced to swallow fluids.

9. *Convulsions*: If the overdose has been still greater, convulsions may occur. Fortunately these are very rarely seen in patients, but are a common occurrence in rabbits. The rabbit unit is the amount of Insulin necessary to produce a convulsion in a one kilogram rabbit. In our experimental evaluation of Insulin we have used thousands of rabbits and in thousands of them such convulsions have been produced, but despite such marked overdosage, only one or two rabbits have died in the entire series. The intravenous administration of a very small amount of glucose restores such convulsed rabbits in two or three minutes.

The Treatment of the Overdosage with Insulin.

The treatment of overdosage with Insulin is undoubtedly started by nature as she changes the glycogen stores into sugar and pours them in to the blood stream. In this Clinic, whenever a patient experiences the slightest symptoms of being too sugar free, twenty grams of milk chocolate; having a food value of Carbohydrate 10, Protein 2, Fat 7, is given at once followed by or dissolved in hot water. No attempt is made to determine whether the urine or blood is too free from sugar for we much prefer to give this emergency ration many times when it is not needed rather than to omit it once when it is needed. The milder symptoms, such as hunger, are promptly relieved by serving the tray a little early. The patient in the early stages of treatment is instructed never to leave the hospital without the emergency, chocolate ration. Many other substances containing sugar formers could be used and are used in lieu of the chocolate. In the beginning we used white crackers but the starch must be changed into sugar before it can be absorbed. Later we used whole milk, but half pints of whole milk do not stay sweet any appreciable length of time and are difficult for the patient to carry around with him. Orange juice, when available, is an excellent form of a rapidly assimilable carbohydrate. Adrenalin may be administered hypodermically which causes the body to rapidly change large quantities of glucose into sugar. In our experience the milk chocolate, especially when followed by or dissolved in hot water, has proven to be an excellent form of medication. It is also very acceptable to the diabetic patient who, for so many years, has been without candy. Patients often welcome too sugar free symptoms because of the chocolate candy reward, and oftentimes nibble away at the chocolate to make it last as long as possible when they should eat it as rapidly as possible.

If a patient cannot swallow, glucose should be given by vein at once. We keep on the hospital floors a number of ounce bottles of sterilized 50 per cent. glucose and a 25 cc. syringe sterilized for instant use, although we are rarely obliged to use this type of medication. We have had no fatalities from an overdosage with Insulin.

The following, written by a patient who had experienced the so-called "shakes," describes his experiences in an interesting manner :—

"The Shakes."

When your eyes go on the blink, you're so stupid you can't think,
And you feel a bit unsteady on your stakes,
Dark specks flit before your eyes and your pulse begins to rise,
Then it may be you're about to get the shakes.

Now your stomach cries for eats, your whole system's craving sweets,
And you think of home-made pies and layer cakes !
You've a knowing appetite, you'd eat a pole cat (seasoned right)
Now I'm almost sure you're harboring the shakes.

Next you note you're in a sweat, for your clothing's rather wet,
And your heart is pounding at a rate that breaks ;
You're as weak as you can be and, by now, you can not see,
Beyond a shadow of a doubt you've got the shakes.

Now you tremble and you shake, your nerve's about to break,
And you can feel all sorts of pains and aches,
Better you should ask your nurse, before you get any worse,
To give you something to relieve you of the shakes.

Oh ! they quarantine the mumps and, for poison, stomach pumps,
And for indigestion, pills are all it takes ;
You've lost your pancreatic gland, still Oh boy ! ain't Nature grand ?
She provided chocolate candy for the shakes.