Ulcerative Colitis

Physician Team-Work in the Treatment

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ALTHOUGH the powerful influence of mind and body upon each other has been known by medical men for centuries, relatively little progress has been made toward understanding and explaining this connection in the pathogenesis of the so-called psychosomatic diseases. The practical application of such knowledge in the advancement of treatment methods has lagged correspondingly, perhaps because of the feeling that it must await the final answer regarding etiology. Yet the ominous prognosis of a disease such as ulcerative colitis in children lends a note of urgency to the need for a more uniformly effective treatment method. Toward this end we have experimented with a *team* of physicians, consisting of pediatrician, surgeon, and child psychiatrist, who function jointly as well as individually in caring for children with ulcerative colitis.

This paper describes our experience and conclusions, with their implications for the extended application of this technic. It seems advisable first, however, to provide background by reviewing the current status of etiologic theory and therapeutic methods which led us to such an undertaking.

ETIOLOGICAL THEORIES

The many theories advanced to explain a disease such as ulcerative colitis have generally emphasized a single causal mechanism—genetic, endocrine, allergic, infective, or psychogenic. Each by itself has remained controversial and none has gained universal acceptance by physicans. Recently there has been a trend toward viewing certain psychosomatic diseases as having multiple origins. In the case of peptic ulcer, the breakthrough in this direction seems to have been provided by Mirsky's[8] biochemical tool, the pepsinogen assay; this permits organic vulnerability (hypersecretory potential) to be plotted against psychologic susceptibility (conflict)—where the two intersect, ulcer formation is very likely to occur. Neither factor by itself is sufficient to trigger it. Engel[2] explains this dual relationship: "The person with high pepsinogen may never be exposed to the particular conditions conducive to ulcer formation, whereas under less favorable conditions of development or of life, he may prove highly vulnerable."

Such a combination of inter-related psychologic and biologic factors has also been postulated in ulcerative colitis by recent investigators. Luby[6] for example, describes ulcerative colitis as a diffuse, inflammatory disease of the large bowel produced by autoimmune mechanisms and hypersensitivity, triggered in a distinctly defined emotional setting.

Regardless of the weight which we as individual physicians may place upon either component, psychologic or biologic, there seems little purpose in continuing the *chicken or the egg* debate, *i.e.*, whether these are purely physical diseases with emotional complications or vice versa. As Knapp[5] writes

regarding asthma in children, "It seems less valuable to debate the existence of psychologic influences in asthma than to ask how they reinforce the asthmatic response and to what extent."

In this spirit, we will not explore the emotional aspects of ulcerative colitis in detail, but only present the following broad and generally accepted principles: 1) Children with this disease demonstrate considerably more disturbance of personality functioning than, for example, another group of children suffering from an acute and chronic disease of the bowel with comparable physical effects, but caused by a known bacterial agent alone. 2) The existence of large emotional and physical problems in this disease is of more than academic importance, since they frequently interlock and potentiate each other. Prugh[9] for example, has reported that personality strength in affected children is inversely proportional to the rapidity and severity of onset of the colitis, and directly proportional to the intensity of stress required to precipitate a somatic response.

Thus, it seems logical that our therapeutic effectiveness diminishes unless we deal with both aspects simultaneously. Here is one of the most pressing challenges of medicine today—whereas collaboration between pediatrican, surgeon, and psychiatrist is highly desirable in the treatment of many diseases, in ulcerative colitis it is often of life or death importance.

THERAPEUTIC THEORIES

The individual specialties of pediatrics, surgery and psychiatry have each tended to view this disease within a different conceptual framework and have gone down separate therapeutic paths, with resulting isolation from each other. There has not been sufficient exchange of experience and mutual validation of findings. This explains why much of the literature is devoted to debating the merits of surgical versus medical management. Cullinan and MacDougal[1] conclude that the majority of patients suffering from ulcerative colitis run an irregular and unpredictable course, and therefore the decision of when and if to advise removal of the colon is extremely difficult. They note that although some patients do die because they do not have surgery, to recommend removal of the colon in all cases does not seem a reasonable solution.

Some steps in the direction of integrating psychiatric and medical management have been taken by Engel,[3] perhaps reflecting his own unique dual role as internist and psychoanalyst. He emphasizes the practical necessity of the general physician to understand the special emotional needs of these patients in carrying out his medical treatment. He points out that one must recognize that these patients are usually less adaptable than others in one's practice, and thus, care must be taken to protect them from new and unnecessary stresses.

With many cases, supportive psychotherapy can be administered by the pediatrician alone. The goal is to protect the patient from gross stress and to assist him actively in managing his life situation, hoping that favorable environmental factors will prevail and remissions thereby be prolonged. With other cases, however, the pediatrican may wish to consult with a psychiatrist regarding supportive measures. He may urge his patient to seek a more intensive form of psychotherapy in which a realistic goal can be set of modifying the basic responsive patterns so that stresses can be handled by the patient himself without emotional and physical devastation.

THERAPY IN PRACTICE

Nevertheless, clinical experience would seem to suggest that some one form of therapy—medical, surgical or psychiatric— usually receives emphasis at the expense of the others. Or, at best, the various forms may operate simultaneously but remain compartmentalized and separate from each other. The reason for this probably lies in the very different ways in which each specialist conceptualizes the disease. The surgeon at one extreme views it in concrete physical terms, *i.e.,* the appearance of the bowel; the psychia-

trist at the other pole deals with the abstract and intangible aspects; the pediatrician often finds himself in between. We suspect that many cases are never referred for other opinions at all because of discouraging experiences with conflicting views and recommendations. One outgrowth of this is the attitude, "Let's save the patient from the 'head shrinkers'! (or 'cutters' or 'child feeders'!)"—a form of overprotectiveness toward one's own cases. Actually, such an attitude merely reveals insecurity about one's own approach, and the fear that that of others may be better.

Finch and Hess [4] concluded that treatment of children with ulcerative colitis is often determined by chance, according to whichever specialist happens to see the child first, and also that any single form of treatment is only partially successful. It is this last feature that makes any one approach so hazardous; the other forms of treatment are often not considered at all until the patient's condition becomes worse, with consultation requested when the treating physician is in serious trouble. Unfortunately, the referring physician's attitude often reverses at that point. Now, instead of overprotecting the patient, he hopes that the case will be taken off his hands so that he can bow out of the picture entirely. Patients and their families are quick to sense the lack of coordination and the fact that they are being shifted from specialist to specialist following lack of response to a particular form of treatment. If they do persevere in spite of this, their disillusionment with the medical profession can pose an iatrogenic problem of serious proportions which will handicap any future approach.

If, on the other hand, the several specialists do happen to see the patient during the period of initial evaluation, they often undertake their own separate treatment programs which operate simultaneously but independently and without a commonly understood goal. Although in one sense of the word everything medicine has to offer is being done for the patient, treatment is characterized by going in several different directions at the same time. In these cases, a crisis such as hemorrhage, perforation, or toxicity may unite the physicians and produce genuine cooperation, but with difficulty since the groundwork for genuine collaborative therapy has not been developed through previous understanding of each other's different problems and points of view.

NEED FOR FLEXIBILITY

Many authors have written about the difficulty involved in the design of a treatment program. In a review of the various forms of therapy, Lyons [7] suggests that "since there is no known specific treatment for ulcerative colitis, nor any special nonspecific measure which is invariably effective, the treatment of each child must be highly individualized. Each modality of therapy must be examined as to its suitability for the particular child and its parents."

It would seem to make eminent sense that each case be judged on its own merits; yet it is very difficult, if not impossible, for physicians to arrive at mutually acceptable decisions when they remain isolated from each other in separate wings of the hospital and communicate via traditional consultation forms, which by their very nature work against a joint decision regarding care. Rigid channels of communication perpetuate rigid attitudes by individuals. The recommendation for early surgery as the only therapy in every case seems as unrealistic as the one for long-term depth psychotherapy alone. We may pay lip service to the idea of interlocking psychic and somatic forces in this disease, but in practice, separate opinions on separate pages of a chart cannot merge by themselves to solve the overlapping problems.

We all know that the patient's attitude can influence the effectiveness of the medical and surgical treatment, either favorably or unfavorably. A pediatrician who utilizes steroids in his treatment program prefers to prescribe in an atmosphere of optimistic expectation rather than in one of negativism or hopelessness on the part of patient and family.

In order to attack this problem it is essential that psychiatrist and pediatrican be in

touch with each other, going in the same direction, with a common goal in mind. The pediatrician must put aside his absolute reliance upon the chemical effect of a drug, and the psychiatrist must, for the moment, abandon his exclusive attention to the patient's emotional state and become involved in drug dosage, response to medication, etc. Furthermore, some pediatricians rely upon regulation of the patient's diet more than do others. Dietary restrictions can provide a ready-made battleground for latent conflicts between child and parents to break into the open. A youngster may never have cared particularly about a certain food before, but the mere fact that it is now forbidden, as well as the manner in which the parent imposes the restriction, may produce increasing friction. The pediatrician is usually drawn into the struggle and in order to resolve the problem successfully, he should be fully aware of the underlying feelings of family members toward each other.

In a previous paper, Finch and Hess [4] noted that it is not feasible to propose one single form of therapy which will fit all the youngsters with ulcerative colitis, probably because there are different degrees of emotional and constitutional contributions in each case. They suggested the close cooperation of a team of well-trained physicians who are capable of recognizing the multiple facets of this disease and of reaching mutually understood decisions regarding the patient's care.

THE FORMATION OF A TEAM

In an attempt to improve the over-all care of these children and to further the investigation of an integrated conceptual framework in ulcerative colitis, such a team of physicians was established at the University of Michigan Medical Center, made up of a pediatrician, surgeon and child psychiatrist. Its operating principles were few and simple: each member of the team would refer all children seen by him for evaluation of ulcerative colitis to the other members for their opinions; monthly meetings would be held in order to discuss the various aspects of each case and to work out a program of joint management; every patient would be followed by *all* members of the team, regardless of the major emphasis in treatment. For example, a child with very early involvement of the bowel on sigmoidoscopy and x-ray might be treated most intensively by the pediatrician or psychiatrist or both, but the surgeon would remain in the picture throughout both by periodic discussions with his colleagues, as well as meetings with the family and re-examinations of the child. The central or vital feature of the team's functional organization might be described as continuity, reflected in the sameness of its membership and the ongoing nature of the meetings.

TEAM EXPERIENCE AND FINDINGS

This shift from hit or miss contacts between physicians to a continuing process of communication provided the opportunity for each specialist to begin real understanding of what his colleagues had been saying in the past and their reasons for saying it. The consequence was that solutions began to appear for problems hitherto regarded as insoluble. For example, the controversy over the optimal time for surgical intervention could be seen in a new light. Surgeons have long complained that operation is often delayed by the pediatrician or psychiatrist until the patient is a poor nutritional risk. Now, through increased awareness of each other's point of view, this polarity of thinking could usually be resolved to everyone's satisfaction. The psychiatrist was reminded by the surgeon's continuing presence on the team of the potential, irreversible changes in the bowel which require surgical intervention. The surgeon, in turn, became aware of the necessity of considering a balance between physical *and* emotional readiness of the child for operation if morbidity and mortality rates were to be minimized.

The team experience itself served to dispel former unrealistic attitudes of "having all the answers" on the one hand, or the opposite but related feelings of helpless frustration when one's own approach was not completely successful. As it became clear to each member

that rigid adherence to preconceived ideas did not lead to real understanding, he became less dogmatic about his own role and more aware of the totality of this disease. The surgeon no longer restricted his observations to the colon, the pediatrician to the physical status, and the psychiatrist to the psyche.

Psychiatrists do well to follow closely the pathologic bowel changes via x-ray, sigmoidoscope, and to examine operative specimens in order to see the end results that our colleagues must deal with. The surgeon, by following these youngsters whether or not operation is currently being considered, gets a better "feel" of the patient's personality and can respond to his specific needs if and when operation becomes necessary, rather than handling him with stereotyped bedside attitudes. The pediatrician can follow more closely the emotional course of the child, which often is linked to exacerbations and remissions of the disease process itself.

KEYSTONE OF TRUE TEAMWORK

We have discussed the fact that teamwork requires an increased mutual understanding and respect among the members. However, we found that more important than this was the fresh orientation shared by each physician that was manifest in the growing identity of each individual as a "team-member." This new-found identity involves a commitment from each physician above and beyond the more narrow image he presents to himself and others as a surgeon, pediatrician, or psychiatrist. This "teamwork" enables the team to absorb the stresses which are placed on it from the outside and helps it to remain objective in its purpose.

A frequent problem in dealing with the families of children with ulcerative colitis is their tendency to manipulate and play one physician against another, often successfully. An example will illustrate this concept in action.

Charlie, an eleven-year-old boy, was hospitalized on the Pediatric Service in the midst of an exacerbation of his colitis. Immediate therapy was directed toward stabilizing his illness through combined medical and psychiatric management. The latter included, in addition to psychotherapy for the child and his parents, daily attendance at school, shop, and other activities in the adjacent psychiatric unit so that he would be forced to face and deal with problems of everyday living rather than withdrawing into a state of infantile helplessness which he would have preferred. He soon began to complain bitterly to the pediatrician that this program was causing increased cramping and diarrhea, so that if the doctor was at all interested in his physical welfare, he must intervene. At the same time the family added further pressure by painting as bad a picture of psychiatric treatment as they could.

A pediatrician's natural tendency to sympathize with a sick child, perhaps combined with an underlying skepticism of psychologic approaches, can be utilized by a family to torpedo a collaborative treatment program before it has gotten off the ground. Such a situation, in which the child and his parents insist that the pediatrician's work is being undermined by the psychiatrist, lends itself to the pediatrician "rescuing" the child and restricting him to the Pediatric Ward "at least for the time being until he is feeling better." We are much less likely to see such an outcome, however, when pediatrician and psychiatrist are collaborators and have a mutual commitment toward maintaining the total program.

Such children may play upon the physician's natural impatience when confronted by uncooperativeness or infantile behavior, and this can also break apart a combined program.

Jimmy was a nine-year-old boy with severe ulcerative colitis since the age of two. He presented extreme physical and emotional symptoms. He also was hospitalized on the Pediatric Ward, but spent a portion of his day in the Children's Psychiatric Unit as an integral part of treatment. Soon, however, his exasperating, infantile behavior began to tax the endurance of the pediatric ward staff. Their unrest was reflected in confusion over who was responsible for particular aspects of Jimmy's care as well as undisguised irritation that he was taking up a bed that should be filled by a "sicker" child. The team pediatrician began to feel considerable pressure from his immediate associates, with whom he could readily empathize, to get rid of this nuisance by placing the case

entirely in the lap of the psychiatrist. Again, it was loyalty to the team concept which permitted the pediatrician to maintain objectivity in working out the problem with his own personnel, a task which would be much more difficult for the psychiatrist—an outsider.

COORDINATING TEAM OPERATION

The mere creation of a team will not magically eliminate interdisciplinary problems. Neither do these problems solve themselves automatically just because the team exists. The team is a vehicle for working out solutions to difficulties which otherwise might prove insurmountable. To put the team concept into action, and to lend direction to its day to day operation, one person must take the lead and act as captain. It is up to him to resolve misunderstandings between members, coordinate the various aspects of treatment, and at times, to guide decisions. Without such leadership the high degree of flexibility required in teamwork could result in disorganized confusion. Moreover, the personalities of patients and their families require that the team have a captain. They tend to choose one person to be the central figure, to whose words they attach the most importance. In our group the captain of the ulcerative colitis team was the senior psychiatrist, partly because the idea was originated by him, and partly because the team began its work with patients in Children's Psychiatric Hospital where it seemed logical for both family and team members to choose as captain the specialist who was having the most contact with these children over a prolonged period. In another setting, however, these same reasons, or different ones, might make it expedient for the pediatrician to be the leader of the team. The essential qualifications for captain are his awareness of the totality of this disease and his commitment to the team approach over the narrower one of his particular specialty.

NEW ORIENTATIONS IN TREATMENT

Working alone allows us to dedicate ourselves too easily to one single approach in every case, gritting our teeth and going ahead whether appropriate or not. Yet we are all aware that patients, and particularly children with this disease, cannot be forced to fit into the same pre-set mold.

By treating the same patient concurrently and discussing him with his colleagues, each team member has been forced to recognize that his particular job overlaps and interlocks with that of his colleagues. From this recognition there has emerged a new technic in which the treatment prescription outlined for each patient is represented by a formula in which the percentage contribution of medical, surgical, and psychiatric treatment varies in a realistic fashion from case to case. Emphasis may shift from time to time according to the youngster's over-all course, with one member of the team becoming more or less important in the day to day handling, but never replacing another.

The psychiatrist, for example, does not consider surgical intervention as a failure of or an alternative to psychotherapy. In fact, it is not even an interruption, since the incidence of ulcerative ileitis in the remaining bowel alone warrants his continued efforts. Furthermore, the period following operation presents crucial problems in which it is essential that surgeon, psychiatrist and pediatrician work together.

While following these patients we frequently have observed emotional storms which made it difficult for the physician to handle their medical care like that of other patients. The surgeon, for example, knows that he cannot simply operate, allow healing to take its natural course and expect a patient and his family to adjust to the ileostomy just because he has explained matters carefully to them. On the contrary, he often finds that although they may have understood completely the nature of the procedure beforehand, they will later deny this, or will demonstrate through their behavior that it was purely an intellectual rather than a true inner preparedness. For instance, there is a rather high incidence of problems with the function-

ing of the ileostomy in these patients which is not due to mechanical factors alone.

Charlie, the eleven-year-old boy previously described, underwent an elective sub-total colectomy and ileostomy because of pseudo-polyposis of the large bowel. He and his family were carefully prepared for the procedure itself as well as the postoperative adjustment to the ileostomy. Nevertheless, Charlie displayed more than the usual worries and difficulties and seemed unable to put into action what he had been taught about routine care and management, resulting in undue irritation of the stoma, skin breakdown around the site, etc. Thus, the usual technics of education were unsuccessful in this case; the surgeon might have gone on indefinitely attempting to do his best in treating each complication as it occurred, but not really getting at the source of the problem. Here the psychiatrist was of help by virtue of his special knowledge of the family situation. Ordinarily, we would expect that Charlie's adjustment would be assisted by his family. Yet in this instance, close examination revealed that Charlie's mother, although knowing how she should help him, was so frightened whenever she saw the ileostomy that she was paralyzed and revolted. She had become depressed following the operation, but was unable to discuss this with the surgeon because "he was the one who did it to Charlie." She became nauseated at the sight of the ileostomy bag and made excuses not to take him out in public because of her fear that the odor would be noticeable.

Much of this seemed to reveal her feeling that *she* had had the operation rather than her son. She was a beautiful, but selfish, immature and self-centered young woman who viewed Charlie not as an individual, but as somehow a part of herself, so that whatever happened to him was experienced as happening to her also. The ileostomy was a blow to her own vanity which she could not accept and these attitudes were quickly communicated to her son through her total inability to help him work out the concerns he had about it. Understanding, then, that such parents cannot be of help in the usual ways, the surgeon can approach the problem with these children somewhat differently and with less frustration. By working together with the surgeon, the psychiatrist can translate his special knowledge of behavior and its hidden meanings into a practical tool that is useful to his colleagues.

MODIFYING TRADITION

Traditional methods of consultation are ineffective for psychiatrists to get their ideas across in an understandable fashion which can be of immediate help in the care of these patients. At times he must take an active part in the total management of the case in addition to administering the more usual kinds of psychiatric treatment. For example, critical decisions regarding the need for hospitalization should not be based on either physical or emotional factors alone, but on intelligent assessment from day to day as to how the physical and emotional factors interact. The decision to hospitalize depends as much upon the number of stools per day as it does on the number of malignant environmental pressures which are too overwhelming to be dealt with on an out-patient basis; the extent to which visits from the family members are allowed should depend upon physical tolerance plus the degree to which contact with certain significant persons affects the patient's illness; when the pediatrician is writing an order for "bed rest" he must weigh the level of hemoglobin against the possible adverse effect that rest might have on a child who wishes to "give up" and withdraw from everything. It is not by referring to consultation forms in the chart that these determinations can best be made, but rather through day to day awareness of each factor, so that pediatrician and psychiatrist can arrive at the best formula for handling a particular child.

OUR CONCLUSIONS THUS FAR

At the present time the concept of the team is well established at the University of Michigan Medical Center. One indication that it has passed through its infancy came when we began to notice referrals directed to the team itself, rather than to its individual specialist members.

Through teamwork we are getting down to the real therapeutic task earlier; there is less "shopping around" by patients and less "passing the buck" among physicians. Patients are being seen earlier in their illness, when they should be more accessible to treatment. Although the team approach has not as yet provided the complete solution to the problem of treating children with ulcerative colitis, it clearly is an essential first step in coming to

grips with the multi-faceted nature of the disease. Perhaps its principal usefulness lies in the mixing together of ideas which are representative of the major schools of thought and emerging with a method which combines the best features of each. We hope that the experience of others with this approach can add to and refine our impressions in the future.

BIBLIOGRAPHY

1. Cullinan, E. R. and I. P. MacDougal: The natural history of ulcerative colitis. Gastroenterologia 86: 582, 1956.
2. Engel, G. L.: Psychological Development in Health and Disease. Philadelphia, W. B. Saunders Company, 1962.
3. Engel, G. L.: Studies of ulcerative colitis: V. Psychological aspects and their implications for treatment. Am. J. of Digestive Diseases 3: 315, 1958.
4. Finch, S. M. and J. H. Hess: Ulcerative colitis in children. Am. J. of Psychiatry 118: 819–826, 1962.
5. Knapp, N.: The Asthmatic Child. Ed. Henry I. Schneer. New York, Hoeber Medical Division, Harper & Row, 1963.
6. Luby, E. D.: An overview of psychosomatic disease. Psychosomatics 4: 18, 1963.
7. Lyons, A. S.: Ulcerative colitis in children. Ped. Clin. N. A., p. 156, Feb. 1956.
8. Mirsky, I. A.: Physiologic, psychologic and social determinants in the etiology of duodenal ulcer. Am. J. of Digestive Diseases 3: 285, 1958.
9. Prugh, D. G.: The influence of emotional factors in the clinical course of ulcerative colitis in children. Gastroenterology 18: 339–354, 1951.

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months later after the arrest of the disease and treated in dispensaries.

All persons over 12 years of age are examined every two years by mass x-ray. Persons working in children's institutions or in contact with children are examined yearly, and those in contact with patients ill from infectious forms of tuberculosis two or three times yearly. Child and adolescent contacts are given INH for three months every year. BGG vaccination is extensively practiced, starting with the newborn. Children born to tuberculous parents are separated from their parents immediately and vaccinated. These control methods are centrally organized, each area having its own tuberculosis dispensary working in close cooperation with hospitals, schools, polyclinics, etc. and supervising all the measures taken.

Helminthiases. The Research Institute of Parasitology and Tropical Medicine founded in 1920, is the basic institution concerned with the helminthiases in the USSR. People suffering from worm infestations are treated so that the worms are removed before they have reached sexual maturity. Special rooms are set aside in both adult and child polyclinics for deworming, the standard practices as well as oxygen therapy being employed. The infestations still of importance are ascariasis, ancylostomiasis, oxyuriasis, taeniasis, and those caused by various flagellates.

When the environment is of importance in the spread of a helminthiasis, as in the case of ancylostomiasis, it is treated. Salt is scattered on the ground in places to kill the larvae. Meat is inspected and condemned if it harbors tapeworm. An active health education program is carried out, particularly among susceptible groups in the population such as agricultural workers and miners.

Poliomyelitis. In 1958 the incidence of poliomyelitis in the USSR was 7.7 per 100,000 population; in 1962 it was less than 1.0, and the cases notified were mostly mild and without serious aftereffects. This great decline in incidence is attributed to the vaccination of the entire population under the age of 20 years with Sabin-type oral vaccine, used exclusively since 1959. This vaccine was prepared at the Research Institute of Poliomyelitis and Virus Encephalitis. In 1959 more than 15 million people were vaccinated; in 1960–1962, 80 million between the ages of two months and 20 years.

Medical experts in the USSR believe that during this period of reduction of poliomyelitis the incidence may be increasing of what they call "para-polio" diseases, caused by Coxsackie and ECHO viruses. These diseases may produce paralysis, but not permanently. Since the differential diagnosis cannot be made clinically, the laboratory diagnosis of all these paralytic infections caused by viruses is the subject of active research programs.

Smallpox. In the ten years before the First World War the incidence of smallpox in Russia was 4.4 to 10.4 per 10,000 population. It was estimated that 28.5 per cent of all the blindness in the country was due to smallpox.

After the 1917 Revolution vaccination was made compulsory, and smallpox has now been eradicated as an endemic disease.

Malaria. In 1934–35 alone there were nine million cases notified. Today no indigenous cases occur, as the result of an eradication campaign undertaken under the direction of the USSR Ministry of Health.

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