

Preventive Aspects of Rural Medicine

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In the field of preventive medicine, except for their organizational structure, rural medicine and urban medicine differ very little. The principles of disease control and prevention are similar whether they are being applied in a city or in a village. This is particularly true for East Pakistan since this is primarily a rural country, and even urban areas include large groups of people who live in a semi-rural setting and have the same types of problems. So in this paper, I will make relatively little distinction between rural and urban medicine except when it seems appropriate.

One of the first things to establish in any preventive medicine program is a systematic method of disease reporting and surveillance. Unfortunately, this is often one of the last things to be developed. It may seem superfluous in a developing country where there are so many disease problems to develop an

elaborate reporting system. You certainly do not need a reporting system to tell you that cholera and typhoid cases are occurring in large numbers. It is difficult to convince people that it is worth the time until they see the benefits of a systematic assessment of disease problems. Dr. Mackay, in his rural medical program in Sylhet, has very nicely demonstrated the value of a complete and accurate reporting system.

Reporting, first of all, allows you to recognize what the disease problems are and where they are occurring. It allows you to set priorities and to allot resources to be appropriately used for the most pressing problems, and it focuses the attention of personnel and the public on major disease problems. Most important, however, a reporting system is an absolute necessity in terms of evaluating any control measures. It is almost impossible to carry out an effective

disease eradication program if one does not know what the level of disease was present before the program and what the results of the control measures are after.

Virtually every public health program in western countries is based on good reporting and surveillance. In the U.S. today there is a program for the eradication of measles. This is quite comparable to the smallpox program in East Pakistan in that large sums of money are being spent to eradicate an important disease in a relatively short period of time. The program in the U.S. is based very much on surveillance. By having an accurate case count, one knows just how well and where vaccine is being distributed and what areas are in need of more careful attention.

Once a method of disease reporting is established, then one can move on to the methods of public health control. Preventive medicine can be divided into a number of categories such as environmental health, infectious disease prevention, chronic disease control, nutrition, child health, industrial health, and so on. These divisions are somewhat artificial because they are quite obviously interrelated. For instance, cholera and typhoid are infectious diseases but are very much related to environmental sanitation including the provision of good water supply and waste disposal. However, the categories are a convenient means of dividing diseases into groups which have similar means of prevention.

We will come back to this point in a few minutes.

What are the major disease problems in East Pakistan? I am not qualified to give information about the province as a whole, but I do have some figures that we might look at to obtain some idea of problems in at least one rural area. These figures are from the CRL vaccine trial area in Matlab Thana of Comilla District. I would say they do not mean to represent the province as a whole but it does represent close surveillance of 100,000 people and thus is one example of a rural area. The birth rate in this area is 4%. The death rate is 1½% per year. Therefore, there is a net gain of 2½% per year. The infant mortality is 10.2%. In other words, for every 1,000 live births, 100 children die in the first year of life. Death in the next four years, in other words the years 1 to 5, is another 10%. So that 20% of all children die in the first 5 years of life. Infectious diseases, of course, cause a major portion of these deaths. After the first 3 years resistance to infection increases, and the death rate falls off.

I selected 150 deaths reports from this area which included all ages. These were selected from handful of villages to obtain a sample of the major causes of death. In 52 of the 150 reports (35%) the cause of death could not be determined. This is in part due to the fact that the reports were filed out by lay persons rather than by physicians. In

many cases, however, the diagnosis was quite easy to make from the description of the disease on the death report. 6% of all the deaths were due to neonatal tetanus. This was easily identified from a description of a child in the first few days of life developing fever, convulsions, rigidity and difficulty in breathing. People in this area have given the syndrome a name, "takuria", which is thought to be the name of the evil spirit causing the disease. Another 2% died of tetanus in the older age group; so a total of 8% of all deaths were due to tetanus alone. 5 $\frac{1}{2}$ % were due to measles or its complications. It is interesting that measles is often considered a minor disease, but when one adds up the death toll from otitis, pneumonia, and encephalitis, it is considerable. 5% died of tuberculosis; 5% died of childhood dysentery; 15% died of sepsis. This would not include pneumonia but would include such diseases as typhoid, fever, and simple wound infections and boils which develop into septicemia.

It is interesting that certain diseases were not listed. Cholera was not listed on any of the reports. This would be due to the fact that this is a vaccine trial area under close surveillance, and though we have not been able to prevent cholera from occurring, the availability of our treatment center has prevented deaths. Smallpox was not listed in any of the reports. I suspect this is partly due to the fact that the

district vaccinators have been very active in this area and is partially related to the reporting that I mentioned earlier. Our field assistants when they recognize a case of smallpox immediately report to the district vaccinator who vaccinates around the case thereby preventing a spread to other individuals. This is a good example of the value of surveillance in prevention of disease.

Nutritional disease was also not mentioned in the reports, though it is quite prevalent it would not be considered a primary cause of death. Death reports are therefore one way of collecting information but certainly do not present a complete picture.

Infectious diseases are obviously the major cause of death particularly in the young, and it is the young with whom we should be most concerned in preventive medicine. Any program of disease prevention and control in the rural areas then should therefore focus on infectious disease control.

What are the major methods of disease control which would be applicable to East Pakistan? The first is environmental control. In its simplest terms, this means the provision of safe water and food supply and adequate means of waste disposal. These measures in themselves would virtually eliminate cholera, typhoid, amoebic dysentery, and shigellosis. This sounds simple, but it is one of the most difficult things to provide partially because of the expense of installing and maintaining

the facilities and partially because of the difficulty in getting people to accept the facilities and use them once they are available.

The second area of disease prevention would be vaccination. There are superb vaccines now available for the elimination of tetanus, smallpox, diphtheria and polio. Vaccination with these agents is so effective that there is no reason why in the next few years we should not see the elimination of these diseases from all areas of the world. Tetanus toxoid is so effective that probably one does at any time in a life time would prevent one from developing a severe case of tetanus. A booster dose of diphtheria-tetanus vaccine as infrequently as every 10 years will maintain a good level of immunity. Smallpox vaccine given every 3 to 5 years will certainly maintain protection from the disease. There is now a safe measles vaccine which has been developed and is in use in the U.S. When this becomes available in East Pakistan, in the not too distant future, it should provide a lifetime of immunity against this disease. The cholera vaccine currently available provides only temporary immunity. After six months a booster shot is needed to maintain a good level of protection. Therefore, until a better preparation is developed, the control of cholera will depend primarily on environmental health and education.

Another method of disease prevention is early detection and treatment of

diseases. Many diseases, if detected at an early stage, can be treated so as to prevent long-term complications. Syphilis and tuberculosis are two good examples of such illnesses. In both cases the diseases are relatively minor and easily treated if detected early but if untreated, will eventually develop into life threatening and debilitating illnesses. In the rural areas such simple things as boils and wounds can develop into septicemia because of a lack of sanitation and simple first aid.

Education, of course is a part of all of these programs. Good water supply, vaccines, and medical facilities are worthless unless people understand them and will put them to good use. However, certain diseases are particularly related to ignorance of good health practice. These are diseases where education alone could completely prevent the illness. An excellent example of this is neonatal tetanus. Very simple knowledge of the correct way to cleanly care for the umbilical cord at the time of birth would eliminate this disease which seems to be responsible for a large number of infant deaths. Nutritional disease is another one which is more related to ignorance of good health practice than anything else. Nutritional disease primarily is the result of mothers not being educated about the correct way to feed their children.

Traditionally preventive medicine has been the responsibility of departments of public health. In the West, and I

suspect to some extent here, practitioners get little training in public health. Particularly in rural areas each practitioner should consider preventive medicine one of his responsibilities. A visit to a doctor might be the only chance that a patient has to get immunized for tetanus or smallpox, so practitioners must take advantage of every opportunity as it presents itself. I think that one can go further and say that any preventive medicine program, be it to combat smallpox, cholera or any other disease, should be firmly integrated into a complete rural health program. This program should be concerned with patient care, health education, disease control and prevention, and infant care. With all of the areas combined in one comprehensive program, each has a better chance of being effective.

We have talked about the aspects of preventive medicine which are

involved with the control of disease and death, but I think we should be concerned with one other area and that is the prevention of life; by this I mean birth control. No health program has any hope of working if the population is growing at a rate which overtaxes the resources of the nation's physicians and health facilities. I gave a figure earlier of 2 $\frac{1}{2}$ % population growth per year. This does not sound high. If one calculates what this means, one discovers that if the whole population of East Pakistan is growing at that rate; the population will double within 30 years. In other words within 30 years there will over 100 million people in the province. This figure itself is more staggering and impressive than anything I could say, and I think it certainly points out the need for a dynamic and effective family planning program.