

Longman Structural Readers: Non-Fiction
Stage 4

What's Happening in Medicine?

John Dent

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Longman

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Contents

	<i>Page</i>
Introduction: Is Tom going to die?	1
Programme 1: What's happening in the fight against disease?	4
Programme 2: Do we make ourselves ill?	15
Programme 3: The fight against mental illness	27
Programme 4: What's happening in surgery?	41
Programme 5: What's going to happen to all the people?	54
Programme 6: Who's going to pay?	66
Programme 7: Yesterday and tomorrow	74
Exercises in Comprehension and Structure	87
Glossary	92

Introduction

IS TOM GOING TO DIE?

A new television programme is beginning. People in all parts of the world can see this programme. Dr Ross is talking.

DR ROSS: When I first saw Tom at the hospital, I said to myself: 'They've brought him here too late. He won't live for long.'

An ambulance had just brought him to the hospital. His face was without colour, and his body was very thin. He seemed to be asleep, but his eyes were open and fixed, in a strange way. He was breathing in a strange way, too; first he breathed very quickly for a time, then very slowly, then very quickly again. His heart was beating in the same way, and very weakly.



An ambulance had just brought Tom to the hospital.

Tom was twelve years old. His family lived in a small town called Bela. Bela was 200 kilometres from the hospital. About a week before, he had begun to have bad pains. The pains were in his head, arms, legs and stomach. He couldn't eat much, and he felt very sick. At first his father and mother thought that he had a stomach illness. 'He'll soon get better,' they thought – and they didn't call a doctor. But Tom did *not* get better. The pains got worse, specially in his head. Sometimes he cried out with pain. Sometimes all his body shook in a terrible way.

At last his father called a doctor. The doctor said: 'Tom must go to hospital at once.' An ambulance took Tom and his father to the hospital in the middle of the night. His mother had to stay at home because she had to look after the other children.

As I examined Tom, his body began to shake again. Breathing stopped for a few seconds, then it started again.

'Take him to the special ward at once,' I said. I thought I knew Tom's trouble. But I wasn't sure yet.

In the special ward, a nurse sat beside Tom's bed all the time. There were a number of electrical machines near him. If breathing stopped again, the nurse would use one of the machines. It would push air in and out of his lungs; it would 'breathe' for him. Another electrical machine measured his heart-beat. He was so weak that his heart could stop at any time. If this happened, we would try to start his heart again. We would use another machine; it would send a very small electric shock through Tom's heart.

A doctor took a syringe and carefully put the needle into Tom's backbone. She took a little of the fluid from inside his backbone. Then she used another syringe and took out a little blood from a vein. We examined the blood and the fluid very carefully. I was right. Tom had meningitis.

Meningitis is a terrible disease. It happens when bacteria get into the head, between the skull and the brain. The bacteria attack the soft tissues, like skin, which cover the brain. These tissues swell; that is, they get thicker. Most body

tissues swell when bacteria attack them. But this is specially dangerous around the brain. The tissues begin to press on the brain.

The brain is the most important part of the body. It is also quite different from any other part. If anything damages the brain, we can't repair it. When something damages our skin, our bones or our muscles, they will usually get better. The damaged parts grow again. But the brain can't grow again. Anything which presses on the brain may destroy part of it. If a person with meningitis doesn't get treatment very soon, he may die. Even if he doesn't die, the results may last for the rest of his life. He may not be able to see, or hear, or move some of his muscles. He may behave quite differently.

Tom had the most dangerous kind of meningitis; that is, tuberculous meningitis. He had had another disease, tuberculosis, for a long time. The bacteria of tuberculosis had attacked his lungs. Usually, tuberculosis of the lungs becomes worse quite slowly. The bacteria slowly destroy parts of the lungs. But they don't usually get into the blood. Often people who have tuberculosis don't even know it. They often recover without a doctor's help.

But if the tuberculosis bacteria get into the blood, the person may become very ill indeed. The bacteria can go round the body, and may attack any part of it. For a long time, nobody knew that Tom had tuberculosis. Then one day the tuberculosis damaged a small artery in his lungs (arteries carry our blood from the heart to every part of the body). The tuberculosis bacteria got into Tom's blood. That was enough to cause tuberculous meningitis.

We gave Tom two kinds of antibiotic drugs immediately. These drugs are some of the most wonderful medicines that doctors now have. They attack the bacteria inside a sick person, but not the sick person's own body tissues.

'Can we save Tom's life?' I asked myself. 'Or is it too late?'

For two days he did not get better or worse. A nurse

watched him day and night, in the special ward. He could not eat, so we gave him liquid food. A bottle hung upside-down over his bed, and a tube carried the liquid into a vein (veins carry our blood back to the heart).

Tom's father waited in the hospital. He was terribly upset. Every time I saw him, he asked me: 'Is Tom going to die?' I could only answer: 'I don't know, yet.'

I wanted to ask Tom's father some questions, too. I wanted to know why Tom had caught tuberculosis. The bacteria can come from another person - one who is very often with the patient. Or they may come in untested milk from a cow with the disease. But usually a child will not get tuberculosis if he has good food, clean clothes, a good house, and plenty of fresh air and sunshine. Doctors examine children at school, and they can stop tuberculosis long before it is dangerous.

But Tom's father looked so upset. I decided to ask my questions later.

Programme 1

WHAT'S HAPPENING IN THE FIGHT AGAINST DISEASE?

TELEVISION ANNOUNCER: Good evening, ladies and gentlemen.

This is TELEVISION ONE WORLD. We broadcast our programmes to every part of the world. Perhaps you have already seen some of them.

Tonight we welcome you to a new set of seven programmes. We shall broadcast one of these programmes each week at this time. We call the set of programmes *What's Happening in Medicine?*

Dr Ross has just told you the story of Tom and his terrible illness. It's a true story. Perhaps you're thinking: 'Why do things like this happen now? Modern medicine can stop infectious diseases like tuberculosis and meningitis, can't it?'

Well, can it? This is the question we ask in this evening's



Tonight we welcome you to a new set of seven programmes.

broadcast. Five people are here tonight; they will try to answer it. First, we have Dr Ross. He will take part in all our programmes. He works in a big, modern hospital in the city of Manaca. Tom had his treatment in this hospital. Second, we have Dr Mary Lind. She's an expert on infectious diseases. The third speaker is Dr Helmy. He is a public health doctor. His work is to prevent disease. A public health doctor must see that people have clean water. He must see that dirt and waste don't stay near their houses. He helps people to build good houses and to breathe good air.

Two other people will take part in our programmes. They aren't experts on anything yet. Here's one of them. I won't tell you who he is. He can speak for himself.

YOUNG MAN: *(smiling)* Perhaps you're wondering: 'What happened to Tom, the sick boy in the story? Did he live or did he die?' Well, he lived – and here I am!

DR ROSS: *(laughing)* Yes, this is Tom. He was stronger than I thought. He's certainly not ill now. The story I told you

happened six years ago.

TV ANNOUNCER: What are you doing now, Tom?

TOM: Oh, I'm still living with my family in Bela. But our little town has changed completely in the last five years. It used to be just a small country town. Most of the people had small farms, like my father.

TV ANNOUNCER: How has it changed?

TOM: Well, one day a lot of men arrived from Manaca. They dug holes in the ground, in the fields and hills round Bela. They found that the earth and rock contained a lot of valuable metals.

Now there are big mines that get the metals from the earth. There are factories, roads, railways, new houses, new schools, a new hospital. Everything's different. I thought I was going to be a farmer, like my father. But now I'm going to be a mining engineer. It's a hard job, but the pay is good. I need the money; I'm going to get married!

TV ANNOUNCER: Yes, we mustn't forget your girlfriend. Here she is. Her name's Barbara. What are you doing, Barbara?

BARBARA: I'm still at school. I'm seventeen. But I want to be a doctor.

TV ANNOUNCER: You're going to work as a doctor *and* marry Tom?

BARBARA: Why not? Tom may go to a lot of different countries when he's an engineer. Doctors are needed in every part of the world. So I'll always be able to work.

TV ANNOUNCER: Good. Tom and Barbara will take part in all our seven programmes. I hope you'll both ask a lot of questions.

TOM: We will.

TV ANNOUNCER: But first, I'm going to ask our experts to give their own answers to tonight's question: What's happening in the fight against disease? Dr Ross, what do you think are the most important changes and discoveries today?

DR ROSS: Well, the first important thing is: Tom's here tonight. He, and thousands of people like him, are alive, not dead.

Antibiotic drugs saved Tom's life. We have had these drugs

for less than forty years. Before then, anyone who had tuberculous meningitis almost *always* died. There was no cure.

With antibiotic drugs, we can stop a very large number of diseases. Before we had these drugs, doctors couldn't really do very much for people with those diseases. They could only try to make the patient comfortable. Then they hoped that the body's natural defences would be stronger than the disease.

TV ANNOUNCER: Do you agree with that, Dr Lind?

DR LIND: Yes, of course. The discovery of antibiotics has completely changed the treatment of illness of many kinds. But we mustn't forget vaccination. If somebody had vaccinated Tom against tuberculosis, he would probably never have had the disease. I think that vaccination is even more important than antibiotics in the fight against tuberculosis.

BARBARA: *More* important?

DR LIND: Yes. First, because vaccination uses the body's natural defences. When we vaccinate a person, we give him a very weak attack of the disease itself. The body then makes its own 'defence' against the disease. When the disease really attacks, the defences are ready. They easily destroy the bacteria or other attackers. Usually the person doesn't even know that the disease has attacked him. 'Prevention is better than cure,' we often say, and it's true.

Secondly, there are some diseases which we can easily prevent by vaccination. But we cannot cure them easily when they have started. Smallpox and poliomyelitis are two terrible diseases of this kind. In some countries smallpox still kills a lot of people every year. Poliomyelitis attacks the nerves which 'pass on' orders from our brains to our bodies. Our nerves are like our brains: if something damages them, they don't easily grow again. So the person can't move parts of his body, his arms or his legs perhaps, for the rest of his life. In both smallpox and poliomyelitis, the cause is not bacteria, but viruses.

TOM: There's a difference between bacteria and viruses, then?

DR LIND: A very big difference. Bacteria are rather like the cells which make up our bodies. We can kill them, or stop them growing in numbers, with antibiotics. But viruses are much smaller than bacteria. They get inside some of the body's own cells, and 'control' these cells. The cells stop their usual work, and start to make more viruses. Then the cells burst, and the viruses get inside more body cells, and 'control' these too. So it continues. Most drugs that will kill the viruses, will kill our own body cells too. It's hard to find one that kills only the virus.

BAFFARA: So we ought to vaccinate everyone and prevent the disease? That's the best defence, is it?

DR LIND: Yes, and we're doing it with smallpox. We don't really need doctors to vaccinate people. Anyone can learn to do it in a few hours. With our new methods, one man can vaccinate a thousand people or more in a day. But a doctor must be in charge; it isn't safe to vaccinate everybody.

Smallpox used to kill thousands of people every year in



One man can vaccinate a thousand people or more in a day.

almost every country in the world. Now we've almost completely stopped it in many countries. We're still vaccinating millions of people in the other countries. There are fewer and fewer cases every year. We hope that soon there will be no more smallpox in the world.

TOM: What about poliomyelitis?

DR LIND: We only discovered a vaccination against poliomyelitis a very short time ago. We certainly hope to stop poliomyelitis in every part of the world too. But it will take longer.

TV ANNOUNCER: Dr Helmy, I can see that you want to speak.

DR HELMY: Yes, I certainly do. You're all talking about vaccinations and cures for diseases. But why do people *get* diseases? Why did Tom get tuberculosis?

BARBARA: (*angrily*) I can answer that. Tom got ill because his father and mother were too poor! Most of the people in Bela were poor. But nobody did anything to help them.

TOM: Don't talk like that, Barbara. Dr Ross saved my life.

BARBARA: I'm not talking about that, Tom. Your father and mother had a very small farm. They could only grow just enough food to keep alive. Your mother had to work in the fields with your father. So she couldn't always cook good meals, or keep the house clean. The house was falling down, too. When it rained, the water came through the roof.

TOM: That's true. I often had to help my father, too. I couldn't always go to school. When the doctor examined the children at the school, I was never there.

BARBARA: So you got tuberculosis. And you nearly died before anybody knew it. It was the fault of . . .

DR ROSS: It was the fault of the life that Tom's family had. Bad food, dirty clothes, a house where the rain comes through the roof - all these things help the tuberculosis bacteria. Tom's father still has his farm, but he has learnt better methods. Advisers from the government and U.N. agencies came to Bela. Tom's father grows vegetables by the methods that the advisers showed him. He sells his vegetables to the mine workers in Bela, and they pay him well. Tom's mother can

stay at home; she can look after the children properly and cook good meals. Tom's young brothers and sisters go to school every day. Other government and U.N. advisers have made great differences in Bela. It's a modern town now, with good houses, really good schools, and a wonderful new hospital.

DR HELMY: There's one more thing which the people of Bela have now. They have clean water in every house. Five years ago, people got their water from wells, or from the river. The well water was sometimes clean, sometimes dirty. The river water was *always* dirty. Everyone threw their dirty water and other waste into it. People very often had diseases of the stomach and intestines, because the water was dirty. It was a terrible place.

Now the water comes through pipes, from a big waterworks. Other pipes take away the dirty water and other waste to a big sewage works. Special machines make the water clean again before it goes to the river. All the other waste is taken away in lorries every day. We've cleaned up your town really well, haven't we, Tom?

TOM: You certainly have.

BARBARA: Yes. Why didn't somebody do it earlier!

TV ANNOUNCER: A doctor once said: 'Clean water and modern sewage works have done more good than anything else in the history of medicine.' Do you agree with that?

DR HELMY: He was right. Cholera and typhoid are terrible diseases. They still kill thousands of people every year in some poor countries. The bacteria of these diseases get into people's bodies through the stomach and intestines; that is, they come through dirty water and dirty food. Usually the food is dirty because the people themselves are dirty. They have no clean water to wash in. If we could give everybody in every country clean water and sewage works, cholera and typhoid would probably disappear. They have almost disappeared in the rich industrial communities. The people in those communities don't even need inoculations against them.

BARBARA: But all these things cost money — a lot of money.

Bela is lucky; the mines have made it rich. But how can people in really poor communities pay for waterworks, sewage works, good houses, and so on?

TOM: Many of the 'poor' communities could be rich. They only need to use their land in the right way. Some of them have valuable metals, as we do. Others have good farming land. But the farms are too small and too poor, like my father's. The metals are still under the ground. These countries need more industry, more modern farms, more business. Then they'd have the money that they need. It seems simple.

DR LIND: But it isn't so simple as that. There are other diseases which we must stop first. We can start new industries and build new towns only *after* we have stopped those diseases.

TOM: Oh? Which diseases are those?

DR LIND: I'm thinking specially of malaria. Malaria used to be a common disease in Europe. Now it has almost disappeared there. But in many hot countries it's still much too common. Hundreds of millions of people get it. A lot of young children die of it. It doesn't usually kill grown-up people. But it makes their bodies weaker. They can't work so hard. They feel unhappy, and they don't *want* to work any more. We can't start new industries and build modern towns in those countries. We must stop the disease first.

TOM: What can we do about malaria?

DR LIND: After a person has caught it, it's sometimes hard to cure it. We don't yet know everything about malaria, but we do know quite a lot. Small parasites cause it. These parasites have to spend part of their lives in a mosquito, and part in a human being. When a mosquito bites a person, the parasites pass from one to the other.

BARBARA: So if we can kill all the mosquitoes, there'll be no more malaria. It seems simple.

DR LIND: But it isn't simple. In 1955, a great international fight against malaria began. It's called an 'eradication campaign', and it's still continuing. Groups of men go round each country

and attack the mosquitoes. They use a substance that kills insects — an insecticide. They put insecticide in all the places where mosquitoes live and lay their eggs. They put the substance in lakes, waterways, wet ground — any places which are hot and wet. Most important, they spray insecticide over the walls of all the houses and other buildings — in all the places where people live. The insecticide may last for six months or even a year. Any mosquito that touches the wall in that time will die.

TOM: So they must spray every wall of every house once or twice a year? That's a terrible lot of work.

DR LIND: It is. But it's necessary. After three or four years, there's no more malaria in that country.

TOM: How much of the world is now free from malaria?

DR LIND: More than half of the places which had a lot of it in 1955. But the fight isn't over yet. Some countries have a lot of wild forest and wet lands. It's very difficult to kill all the mosquitoes in those places. So we're trying to find a drug or a



Spraying insecticide over the walls of houses.