COMMON INFECTIOUS DISEASES IN GENERAL PRACTICE: CLINICAL*

BY

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Infection is a reminder that our existence in this world is constantly challenged by our microscopic neighbours. They came first, and our capacity to resist them is a prime condition of our survival. Consideration of this may help us to keep in focus the nature of parasitic invasion and the importance of the body's response to infection. The better we understand, the more useful we can be to sick people during these not infrequent episodes of their lives. In my practice in January, 1955, infectious diseases accounted for 70% of 113 new visits—50% in children and 20% in adults. Even in July they accounted for 50% of 90 new calls—40% in children but only 10% in adults.

The prevalence of these different infections has varied throughout history. In this country infectious diseases fall broadly into two main groups, those due to viruses and others due to bacteria. Some of protozoal origin, which remain common in tropical countries, are to-day rarely encountered here. Those variations reflect the barrier that we have successfully put up between ourselves and the insect parasites since the time when malaria, plague, and typhus were frequently seen in English homes.

In more recent years another barrier has been created—namely, chemotherapy and the antibiotics. These selective weapons have brought us temporary respite from most of the pathogenic bacteria—for how long we cannot yet clearly foresee. Against what are possibly man's older enemies, the viruses, we still have only our natural resistance to rely on. The responses of the body to parasitic invasion and the damage done by the invaders together make up the varied clinical picture of infectious illness.

Identification over the Centuries

Over the course of centuries first one and then another of these common patterns have been identified and described (Osler, 1912; Encyclopaedia, 1952; Walker, 1954). Plague, leprosy, malaria, phthisis, and probably cholera had all been mentioned or described before 500 B.C. Tapeworm infection was known to the Jews of the Captivity, and diphtheria with paralysis of the palate is referred to in the Talmud. Pneumonia with pleurisy, and mumps with its orchitis, were described by Hippocrates 300 years B.C. The association of rabies in dogs with hydrophobia in man was known to Celsus 100 years B.C. On the other hand, although smallpox has been recognized as affecting an Egyptian mummy of about 1000 B.C. (Osler, 1912), the first extant clinical description of it dates only from about A.D. 900 by Rhazes, of Basra. He also first described measles, but as a mild form of smallpox, not as a separate disease. It was Sydenham, in 1675, who first showed that these two were distinct, who also named scarlatina and mentioned its variations in virulence. Just before his time three other common diseases had been first identified—syphilis in 1493, chickenpox in 1553, and whooping-cough in 1578. After Sydenham there was another lull until German measles was described in 1752. The early nineteenth century saw several more diseases separated from the general welter of infection

—cerebrospinal fever in 1805, typhoid in 1813 and 1829, herpes zoster in 1831, and infantile paralysis in 1840.

All these descriptions were based on man's unaided senses, but during the second half of last century microscopy helped to quicken the pace, and provided doctors with a means of detecting hitherto invisible differences between one man's illness and another's. Then with the discovery of filterable or ultramicroscopic forms of parasitic life a new chapter was opened, written in a language difficult to read. We in our lifetime are at long last seeing what is known about viruses translated into practical help for the clinician, by means of serology linked with modern tissue culture.

While the discovery of antibiotics has opened the way for the virtual elimination of bacterial diseases as a major cause of human suffering, viral infections—which so far remain largely outside the control of antibiotics—have assumed a fresh importance (Andrewes, 1953). The clinician has once more been thrown back upon his own resources, and must needs study these infections minutely as of old in order to see if he can detect any further differences between the clinical patterns of many undiagnosable epidemics. An accurate description of such a pattern still remains an important duty of every family doctor; the encouragement and collection of these reports is a main objective of the Epidemic Observation Unit of the College of General Practitioners.

Evidence of Infection

First let us consider how we decide that a patient's illness is due to an infectious agent. Evidence falls into two broad categories—that from the patient and that from his associates. In the patient we find first a general reaction—fever and its symptoms. I hold the opinion that we should aim at teaching someone in every household to read a thermometer and to record their measurements on paper for us. I transfer such figures on to a usefully small pocket chart, which covers four weeks. The pattern of fever can be of diagnostic value and may guide us, too, in the duration of our treatment. Speaking of charts, I also encourage my patients with pertussis to keep "cough charts" for me, showing the total number of coughs, whoops, or vomits which occur each day. Such records occupy the children and give a good visual guide to their progress and to the value of one's treatment.

In our patient we next look for evidence of local tissue changes and their symptoms. The meaning of some physical signs is not yet fully understood—for example, painless enlargement of the posterior cervical lymph nodes. A pilot survey among children carried out at his surgery by Dr. J. R. Robertson showed that palpable enlargement of the post-cervical lymph nodes was seldom found in infants, became increasingly common in children of 5-8 years, and was less frequent again in the "teens." This subject is now being further studied in the S.E. England Faculty of the College of General Practitioners, with the help of Dr. I. M. MacDougall, County Medical Officer of Health for Hampshire.

The old physicians examined their cases with the greatest care, discovering, for example, the friction rub of pleurisy, the sweet taste of glycosuria, and Koplik's spots, which are still taken on trust by some of us. The importance of searching for physical signs can be exemplified if we consider how difficult it would be, even now, to distinguish measles without its rash. We need to study the non-exanthematous viral diseases more closely, looking and feeling for fresh abnormal signs. Blood examinations, including serology in the acute and convalescent stages, throat swabs, or throat washings of the patient and his immediate contacts, the collection of sputum for bacteriology or of faecal specimens for both bacteriology and sometimes for virus isolation—these can all on occasion be important laboratory aids, but not short cuts, to diagnosis. Nothing can take the place of regular and frequent examination of our puzzling cases of infectious disease, for it is at the bedside that we will detect our first glimpse of a new syndrome.

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A Fruitful Field

Another fruitful field for inquiry and research in general practice is the evidence which we can gain from our patient's associates. Contacts, incubation periods, and quarantine are the stock-in-trade of our young patients and their parents, both in term-time and in holidays. But what a lot we still have to learn. For example, just how long before or after the rash of measles and chicken-pox or the swelling in mumps is a patient really infectious? Does the duration of contact matter? Does it differ indoors from out-of-doors? I make a plea for the publication of every good example of a single short contact before or after the primary illness which leads to infection of the secondary cases. I have seen measles spread by a 10-minute contact out-of-doors on the day before the rash. Such records would help to fill in many gaps. For example, are we sure yet that the incubation period of glandular fever is short—5 to 12 days, as is usually stated (Price, 1946)—rather than a much longer one, as in mumps or hepatitis? In this respect we should take care to use the term "serial interval," rather than incubation period, when we measure, for example, from rash to rash, rather than from contact to the onset of illness.

Infectivity seems to vary from one outbreak to another, especially in mumps. I am familiar with the family contacts of this disease going down one by one throughout the summer holidays. An epidemic in my practice went through 11 generations of infection. I have heard, too, of a family in Mauritius, with 12 children and many servants, who were in quarantine for mumps for more than a year. Once, however, I had a schoolboy return with mumps into a large family, none of whom had had the disease. My usual forecast was confounded when his mother and her five other children all developed mumps on the same day, the day they were moving house. They all went by ambulance.

As regards quarantine, is it not time that our profession challenged the schoolmasters, or rather mistresses, particularly over the question of German measles? I would like to encourage "German measles tea parties" to which an infected girl might invite her non-immune school friends, or a holiday camp run by the Medical Research Council, where an attempt could be made to keep a culture of the disease going by constant replenishment among the young volunteer visitors.

Seasonal Prevalence

Consider, now, another aspect of the differential diagnosis of infections of unknown origins—namely, the value of learning the seasonal prevalence of some of the diseases that are less well known. Winter vomiting disease is coming to be recognized for what it is—a common disease among our patients. It appears to occur sporadically throughout the year, becoming epidemic in the autumn, perhaps decreasing in the coldest weather, and increasing somewhat again in the spring. The spread of winter vomiting disease has been traced by collective reports from 158 family doctors, each of whom saw a few cases for only a few days or weeks. The reports gave details, not of patients, but of the presence or absence of an outbreak in the district.

The season for Coxsackie virus infections is not yet well established. In several years, about April, I have seen little groups of cases of sudden dry pleurisy that may have been Bornholm disease. During the late summer and autumn I have followed an outbreak of Coxsackie virus infection from Oxford to Shere, through seven generations of infection. None of these cases really looked like non-paralytic poliomyelitis: the onset of high fever was very sudden—one boy took ill while on a swing; the children neither felt nor looked as ill as their temperatures suggested; many of them had unduly pink-looking eyes but no photophobia; there was headache but no dorsal spasm; the fever ceased without drugs in 24–48 hours; and convalescence was rapid (College of General Practitioners, 1954).

A.P.C. Group of Viruses

In June, 1955, I was privileged by their medical officers to visit two public schools where outbreaks due to viruses of the adenoidal-pharyngeal-conjunctival group, recently identified in America (Huebner *et al.*, 1954; *Lancet*, 1955), were occurring. Serological tests in a family in my own practice then showed that an outbreak of conjunctivitis among them just previously had also been due to a similar virus. We have no idea yet how prevalent these A.P.C. virus infections really are. In the following September and October an epidemic among schoolchildren at another village in my practice, associated with high fever, headache, mild sore throat, abdominal pain, and glandular enlargement, was proved almost certainly to be due to a virus of this same group; and in May, 1956, a boy with "pink eye" and high fever was also found to be positive. Here, then, were three such outbreaks in one practice within a year.

I had a chance to make use of my clinical observations about the autumn epidemic which I saw. During it one of the schoolboys, not yet affected, broke his leg and was admitted to hospital. I phoned the house-surgeon later and warned him that if the boy suddenly developed a temperature of 104° F. (40° C.) there might be no need for alarm. He duly did so, and it was in fact from him that we obtained serological proof of the nature of his infection. The first boy to take ill in this epidemic was admitted to hospital and had his appendix removed, being afterwards labelled as acute non-specific mesenteric lymphadenitis. On the day after he was taken ill several more of his schoolmates went down, and it was clear that we were dealing with an epidemic. Perhaps we should test future cases of mesenteric lymphadenitis serologically for evidence of recent infection by A.P.C. viruses.

Before leaving the subject of differential diagnosis of infections of unknown origins, I would like to emphasize this reddening of the conjunctivae. It is a feature of several virus diseases; measles, of course, is the best-known example, but the reddening of the eyes in some patients with A.P.C. virus infection is even more striking. Injection of the conjunctivae in a feverish child should put us on guard that we may be dealing with a viral rather than a bacterial infection.

I now raise the subject of the comparative severity of viral illnesses in primary and secondary cases, and in children of different ages. For some years I have had the impression that secondary cases of chicken-pox are more severely affected than the primary, if all are in the same house. This factor of house contact seems to override the factor of age in determining severity, especially in chicken-pox, and may be due to a heavier infection contracted over a longer period; otherwise both in chicken-pox and in measles I observe that the younger children suffer a lighter attack, while teenagers and adults are usually more severely ill (Watson, 1954).

Problems in Treatment

A mother often first recognizes that her child is feverish between tea-time and going to bed, or because he cannot get to sleep. It follows that in general practice a doctor frequently starts his treatment of infectious disease towards nightfall. What can he do to help? When I diagnose a bacterial infection likely to respond to an antibiotic—for example, acute sore throat or otitis media—I consider that immediate treatment should be given, whenever possible, with penicillin by injection. I prefer this to a sulphonamide because of its rapid action without the risk that vomiting may delay the start of effective therapy. The pain of early acute otitis media may cease within three hours after an injection of 500,000 units of penicillin G without any other drugs being given. Later doses of penicillin can be given orally. If, however, the diagnosis is in doubt, or where I suspect I am dealing with a viral infection, I prefer to see what the morrow brings. During the summer or autumn I tend particularly to avoid parenteral penicillin

in a child with fever until the need for it is clear; at that season I prefer to give penicillin in liquid or tablet form rather than by injection, especially if poliomyelitis is prevalent locally.

At my first visit, before leaving I shall be asked for "something for the night." Until recently I was as content as anyone to prescribe aspirin for this purpose in a feverish patient, but three years ago a case "went wrong," which made me stop to think. We are all familiar with the similarity between aspirin and cortisone in suppressing the inflammatory reaction of the body in rheumatic disease. Cortisone also suppresses the body's reaction against all parasitic infection, and, for example, may liberate a latent tuberculous focus. Has aspirin this danger too? I believe that recovery from influenza may be delayed by aspirin, and that a sore throat can become more extensively affected. Some of the prostration in those who have dosed themselves with aspirin compounds before asking for our help is due, I believe, to their reduced resistance. This is a problem, however, which needs much more clinical and laboratory investigation. For example, is aspirin dangerous in poliomyelitis? Can it, like cortisone, increase the susceptibility of healthy rhesus monkeys to infection by poliomyelitis virus? Can it influence the amount of paralysis resulting from invasion by this virus? Should we warn our patients against their ready use of aspirin for fever and headache, especially during the summer and autumn?

I try now to avoid prescribing aspirin at night except in hyperpyrexia, and am looking for a good sedative and analgesic for children which is not antipyretic.

While on the subject of symptomatic treatment, there is a use of antihistamine drugs to which I would like to draw attention. For several years I have been using full doses of mepyramine maleate in children with chicken-pox for the irritation which characteristically accompanies the rash (Watson, 1954). In children who were expecting an attack and who have been able to start taking their tablets as soon as the rash appeared I have found that the eruption is modified by the drug in two respects: first, a smaller proportion of the spots go on to form blisters by the fourth day, and, secondly, around each blister the ring of erythema is smaller. In one family the mother was kind enough to attempt a measurement of the first difference for me on her two boys. The elder was not treated with mepyramine, as I was away; on his front he had 154 spots, of which 45 blistered (29%), and on his back 211, of which 39 blistered (or 18%). His younger brother had a heavier crop of spots, as I expected, being the secondary case, and fever to 102° F. (38.9° C.) for four days. But of his 286 spots in front only 31 (or 11%) blistered and only 28 (9%) out of 314 on his back (see Table).

Effect of Mepyramine Maleate on Blistering in Chicken-pox

	Age	Number of Spots			
		Front		Back	
		Total	Blistered	Total	Blistered
D.C.	9	154	45 (29%)	211	39 (18%)
P.C.	7	286	31 (11%)	314	28 (9%)

College of General Practitioners' Report

On the subject of treatment, I want finally to refer to the prophylactic use of sulphonamides and antibiotics, particularly in measles. Three years ago about 130 of us in general practice agreed to keep records about our cases of measles in a way that could subsequently be analysed. We hoped to measure some of the influences which affect the likelihood of complications arising in any particular child, to see how these could be prevented. The results of this investigation, based on 4,728 records, have been published by the College of General Practitioners (1956).

In children who were healthy at the onset of their measles we found that it was the severity of the measles itself which mainly determined the incidence of complications. Among

mild cases the rate was only about 4%, among the average cases it rose to about three times, and among severe cases it was ten times this figure. There were proportionately more mild cases of measles among infants and young children than among those of school age. In children under 5, the proportion of mild cases was slightly but significantly higher among those who were breast-fed than among those who were not. If complications did arise in young children they were more likely to affect the chest than the ear; among previously healthy children, acute otitis media was not seen under the age of 2. For each grade of severity the incidence of complications scarcely varied in different types of practice—urban, mixed, or rural; but gross overcrowding in any house nearly doubled the incidence of complications compared with an ordinary house. If instead of being healthy the child showed at the first visit physical signs that they were not normal in measles, the incidence of complications rose from 4% to about 20% in mild cases, to about 40% in an ordinary attack, and to 66% if the measles was severe. Even a past history of infections of the ear or chest increased the complications rate, particularly when the measles itself was mild; this was also true if the child was one whom we would call "catarrhal." These differences, however, were less striking among the average cases and not noticeable where measles was severe.

Instead of lowering the total incidence of complications in measles, the use of sulphonamides as routine, without reference to any of these factors, raised it slightly in all types of practice and for all grades of severity. In measles of average severity, however, the incidence of acute otitis media and other aural complications was lowered by the routine use of sulphonamides, though only at the cost of doubling the rate for pulmonary complications. The routine use of oral penicillin or other antibiotics lowered the total incidence of complications slightly. It had least effect upon the rate for otitis media in the ordinary case and most upon the rate for pulmonary complications in severe measles.

To sum up, the routine use of antibacterial drugs confers little or no benefit on a healthy child undergoing an ordinary attack of measles, and indeed it may do harm. If, however, the child is not healthy; if its attack of measles is judged to be severe; particularly if there are already abnormal signs present in its ears or chest; then antibacterial treatment will probably be required. In deciding the most suitable drug to use for any such child we must bear in mind that the action will be curative, not strictly prophylactic. We should therefore wait for clear indications of the need for such treatment, rather than embark upon an expensive and sometimes harmful routine. These drugs can help us to resist the challenge of our bacterial neighbours, but only when appropriately used.

Summary

Infectious diseases may account for more than 50% of new visits in an English country practice. Since before 500 B.C. descriptions of epidemics based on man's unaided senses have survived, but in the last century microscopy provided a new means of differentiating between one infection and another. The control of bacterial diseases by antibiotics has brought viral infections into fresh prominence. A description of epidemic diseases of unknown origin based on careful examination still remains an important duty of every family doctor.

Much work remains to be done in the biometrics of infectious diseases. Useful records of temperature and progress charts in whooping-cough can be kept in many homes. Some physical signs need revaluation—for example, enlargement of the posterior cervical lymph nodes.

In general practice, treatment of infectious disease often starts towards nightfall, and some possible arguments against the widespread use of aspirin are given.

The report of the College of General Practitioners on the complications of measles is summarized, and the need for clear indications for antibacterial drugs is emphasized.

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MEDICAL NEW YEAR HONOURS

The names of the following members of the medical profession were included in the New Year Honours List published in the *London Gazette* on January 1.

K.C.V.O.

Sir ARTHUR ESPIE PORRITT, K.C.M.G., C.B.E., LL.D., M.Ch., F.R.C.S. Sergeant-Surgeon to the Queen. Honorary Consulting Surgeon to the Army

K.B.E. (Military Division)

WILLIAM ALEXANDER DUNCAN DRUMMOND, C.B., C.B.E., F.R.C.S., D.L.O. Lieutenant-General, late R.A.M.C. Director-General, Army Medical Services.

D.B.E. (Civil Division)

JANET MARIA VAUGHAN (Mrs. Gourlay), O.B.E., D.M., F.R.C.P. Principal, Somerville College, Oxford.

Knighthood

GEORGE LINDOR BROWN, C.B.E., M.Sc., M.B., Ch.B., F.R.S. Jodrell Professor of Physiology, University College, London.

CHARLES DAVID READ, M.B., Ch.B., F.R.C.S., F.R.C.S.Ed., F.R.A.C.S. President of the Royal College of Obstetricians and Gynaecologists.

C.B. (Military Division)

ALFRED EDWARD CAMPBELL, M.D., D.P.H. Major-General, late R.A.M.C. Honorary Physician to the Queen. Director of Army Health.

JOHN CONRAD NEELY, C.B.E., D.M., D.O., D.O.M.S. Air Vice-Marshal, R.A.F. Honorary Surgeon to the Queen. Consultant in Ophthalmology, R.A.F.

C.B. (Civil Division)

Sir WELDON DALRYMPLE-CHAMPNEYS, D.M., F.R.C.P., D.P.H. Lately Deputy Chief Medical Officer, Ministry of Health.

C.M.G.

JOHN GEORGE HUNTER, M.B., Ch.M. General Secretary of the Federal Council of the British Medical Association in the Commonwealth of Australia

C.B.E. (Military Division)

DAVID HERBERT KERNOHAN, M.B., B.Ch. Surgeon Captain, R.N. (retired).

LIONEL LOCKWOOD, M.V.O., D.S.C., M.D. Surgeon Rear-Admiral, Royal Australian Navy.

C.B.E. (Civil Division)

HAROLD MAURICE COHEN, M.D., D.P.H. Principal School Medical Officer for the City of Birmingham.

HUMPHREY FRANCIS HUMPHREYS, O.B.E., M.C., T.D., M.B., Ch.B., F.D.S. R.C.S. Formerly Vice-Chancellor of the University

of Birmingham and Emeritus Professor of Dental Surgery in the University. For services to dental surgery.

JOHN MCQUEEN JOHNSTON, M.D., F.R.C.S.Ed., M.R.C.P.Ed. Principal Medical Officer and Pharmacologist to the Department of Health for Scotland.

RONALD EPEY LANE, M.D., F.R.C.P. Nuffield Professor of Occupational Health in the University of Manchester. Member of Industrial Health Advisory Committee.

JOSEPH ANTOINE RENÉ LAVOPIERRE, M.D., D.P.H., D.T.M. Director of Medical Services, Mauritius.

JOHN FREEMAN LOUTIT, D.M., F.R.C.P. Director, Radio-biological Research Unit, Harwell.

GEORGE WILLIAM JOHN MACKAY, M.B., Ch.B., D.P.M. Medical Superintendent, Rampton Hospital, near Retford, Nottinghamshire.

WILLIAM NORMAN PICKLES, M.D., D.Sc., F.R.C.P.Ed., M.R.C.P. Lately President of the College of General Practitioners.

RALPH WHISHAW, M.B., Ch.M., F.R.A.C.P., F.R.C.P. A prominent physician in Hobart, Tasmania.

CHARLES FRANCIS WHITE, O.B.E., M.D., D.P.H., D.T.M. Lately Medical Officer of Health for the City of London. Recently President of the Society of Medical Officers of Health.

O.B.E. (Military Division)

JOHN GEOFFREY WAUGH, L.R.C.P.&S.Ed. Lieutenant-Colonel, R.A.M.C., T.A., now Territorial Army Reserve of Officers.

O.B.E. (Civil Division)

LESLIE WILSON BANKS, M.B., Ch.B. Senior Medical Officer (Clinical), Western Region, Nigeria.

WILLIAM JOSEPH BRANDAY, M.R.C.S., L.R.C.P. Superintending Medical Officer (Specialist), Trinidad.

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HENRY JOHN CHADWICK HANRAHAN, M.B., B.S. A medical practitioner of Albany, Western Australia. For services to the community.

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SYDENHAM FREDERICK MOORE, B.M., B.Ch. British subject lately resident in Egypt.

HAYDN JONES MORRIS, M.R.C.S., L.R.C.P. For public services in the Federation of Rhodesia and Nyasaland.

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WALTER LAING MACDONALD PERRY, M.D. Director, Department of Biological Standards, National Institute for Medical Research.

JOHN CHARLES ROBB, M.D., M.Ch. Consulting Surgeon, Downe Hospital, Downpatrick, Co. Down.

GEORGE SIMPSON, M.B., B.S., F.R.C.O.G., M.R.C.P., of Ivanhoe, Victoria. For services to the Flying Doctor Service of Australia.

WILLIAM ARTHUR LEIGH TUCKER, F.R.C.S.Ed., F.R.F.P.S. Surgeon Specialist, Aden.

M.B.E. (Military Division)

JOHN VAUGHAN-BRADLEY, T.D., M.B., B.Chir., F.R.C.S.Ed. Major, R.A.M.C., T.A.

M.B.E. (Civil Division)

OLIVE GUMPRICH, M.B., Ch.B. For social welfare services in Southern Rhodesia.

SYDNEY DOUGLAS GUN-MUNRO, M.B., B.S., D.O. Resident Surgeon, Colonial Hospital, St. Vincent, Windward Islands.

SEBASTIAN BYEKWASO KYEWALYANGA. For medical services in Uganda.

ALEXANDER DAVID BAIN MACKIE, M.B., Ch.B. Chairman, Birmingham "Stirling" Sea Cadet Corps Unit.

GEORGE DAVIS MCLEAN, M.R.C.S., L.R.C.P., D.T.M.&H. Medical Officer, St. Kitts, Leeward Islands.

ROBERT CUTHBERT OGG, M.B., Ch.B. Formerly a Medical Officer in Basutoland.

FRANK BLACKLOCK THOMSON, M.B., Ch.B. Deputy Chairman, Dundee National Service Medical Board.