

the causes of death after surgical operation into unavoidable and avoidable or preventable causes.

Among the first may be mentioned the age, sex and constitution of the patient, the severity of the disease or injury for which the operation is demanded, or the severity of the operation itself, these always influence the result, and are taken into consideration by both the surgeon and patient in estimating the chances of success. Besides these, we have the various common but often fatal complications of wounds, the much dreaded septic diseases, which destroy life so often after surgical operation, in patients of all ages and of every variety of constitution.

Is it possible to prevent these fatal complications of wounds? Can we reach the cause of erysipelas, of pyemia, of septicæmia and diseases of that class? Is it within the power of the surgeon to find the influences that give birth to these diseases, nourish and propagate them; and, finding these influences, is it easy to remove or destroy them and render them powerless to do injury? To these questions the operating surgeon of to-day demands an answer.

In the face of the fact that the operators in large cities are men of acknowledged ability and skill, and that almost all operations are now performed without pain, and many without loss of blood, reducing the shock to the nervous system and to the circulation to a minimum, we must acknowledge that the death-rate after surgical operation is too large.

I am firmly of opinion that the removal of these diseases, is to a great extent, within the reach of the surgeon, and that we can reduce the death-rate after surgical operations.

In the great majority of cases I believe the cause, the real and active cause of pyemia, septicæmia, erysipelas and diseases of that class to be *dirt*—dirt in in some form or other, dirt brought sometimes in one way, sometimes in many ways in contact with open wounds. I include under this common term all noxious vapors, all germs, all bad air, all floating particles of dead and decaying matter from whatever source they may be derived. It may soon be discovered in what particular constituent of various impurities the cause of septic disease reside, and it may soon be found out what particular form of noxious matter gives rise to each form of septic disease; but it is enough for the practical surgeon to know that the term *dirt* includes every form of impure matter, and that cleanliness is the sovereign remedy. In order to apply the principles of cleanliness in the treatment of open wounds, let us see for a moment the number of ways in which noxious

matter may be brought in contact with them. 1st. Through the air of sick room or hospital ward. 2nd. Through the outer air with which the sick room is ventilated. 3rd. By the bed and bedding. 4th. By the bandages, sponges, towels and cloths used in dressing. 5th. By the instruments used by the surgeon or dresser. 6th. By the hands and clothes of the surgeon, dresser or nurse.

When we know that septic diseases may be derived from any one of these sources; that noxious matter may be brought in contact with wounds through so many channels of impurity; that these sources of disease are within our reach and that each of them can be removed by clearlines; is it not proven that Septic diseases may be, to a great extent, prevented, and that the death-rate, after operation can be reduced, when we learn what absolute cleanliness means?

Is it not plain that the greatest attention to the principles of cleanliness, and the greatest care in their application to the dressing and treatment of wounds are the surgical wants of to-day? I believe that cleanliness is a certain preventive of septic disease, but its full value will not be known until the profession learn in how many important particulars the principle of absolute cleanliness must receive attention.

The cleanest bed, the freshest sheets and the newest sponges are of little avail, if the walls and floor of the sick-room or hospital ward are loaded with impurities; on the other hand, the purest air in a canvass tent in an open field is of no benefit if the filthy products of disorganizing tissue and decomposition are hidden away in sponges and cloths, used in dressing. While on this subject we must all acknowledge how much we owe to Professor Lister, for his labor in the domain of the anti-septic treatment of wounds, which has set the profession thinking and acting in the right direction. When we read in his published papers of the minuteness with which Lister carries out his anti-septic treatment, and the great care with which he attends to every detail in dressing, we cannot but believe that much of his success is due to the cleanliness which such care in dressing necessitates. I believe we shall soon find that cleanliness is our chief anti-septic, and that carbolic acid and other anti-septics are but aids to absolute cleanliness.

To go beyond the domain of surgery to general hygiene, I believe that in relation to the national health, the health of the community, the family and the individual, we have yet to learn how to be absolutely clean.