How To Reinvent The Modern Medicine After Society Collapses

If we ever do live to see the collapse of our modern civilization then we can expect almost the entirety of our technological healthcare systems to vanish overnight – along with the peace of mind that it brings.

With such a loss, even the banalest injuries, such as a simple cut to the arm, could potentially be fatal if an infection poisons the blood.

A loss of access to the miracles of advanced medical treatments, such as antibiotics and surgery, will also likely coincide with a drop in the average life expectancy of the survivors – a drop of perhaps as much as a decade. Even if a large number of healthcare workers survive, their skills will be almost useless without the gear to implement them.

And while it will be impossible to meaningfully talk about even a tiny bit of our current medical knowledge, what this article hopes to do is explain the fundamentals. So that if you are unlucky enough to live through the end of days, you will at least carry with you the basic principles that will be so essential in rebuilding all of our medical know-how – and that will assist in the discovery of almost everything else from the ground up.

Reinventing basic hygiene and sanitation

Let us start with an easy one. At the end of the world, whether you are scrambling over the rubble of ruined cities or just trying to butcher and cook an animal for food, you are very likely to pick up an infection that could be lethal. To make sure this doesn't happen, you will need an understanding of the basic hygiene practices that we so often take for granted.

If there is one good thing to come out of the coronavirus pandemic, it is that we are more aware of how germs spread and the importance of good hygiene. Regular hand washing – as often as you can – and limiting how often you touch your face are both really important. Germs are everywhere.

But in this new world, you will have to take special care to avoid so-called 'enteric' illnesses that spread via fecal-oral transfer. Regular handwashing will help to break the cycle of how these bugs spread. One notorious example of an enteric disease that used to ravage older communities is cholera. (Which incidentally, if you do catch, can be cured by drinking a portion of clean water mixed with some salt and sugar.)

Reinventing medical check-ups and examinations

The lifesaving CT scans, X-rays, and other procedures will be a thing of the past once civilization unravels, and so will much of the medical expertise that will be necessary to use them. But laying the foundation for the road to recovery is easier than you might think.

For most of history, and even up to the early 1800s, doctors had no way of seeing inside the body. They could only rely on considering the external symptoms, or if the problem was internal, by pressing an ear up to the body and listening or by prodding about inquisitively with their fingers.

One day a French doctor, René Laennec, was doing exactly this to a French woman. Feeling rather indecent and awkward, he devised a shockingly simple apparatus to make the process less intimate. He rolled up a piece of paper and placed his ear to that, instead of the woman's body. What he found was, the paper-tube actually amplified the internal sounds in the body.

Thus, the stethoscope was born. Technicalities aside, a makeshift stethoscope can be anything from rolled-up paper to a hollow wooden tube. They are particularly good for listening out for irregular heartbeats, the cracklings and wheezing of diseased lungs, the health of unborn babies – even if the bowels are obstructed.

Before the end of the Victorian period, the doctor's most helpful instruments were the stethoscope, the thermometer, and a set of inflatable cuffs to help gauge blood pressure. All three were used in tandem to help chart and reveal various types of specific illnesses. Until there has been a significant rebuilding of civilization, the stethoscope will be your key tool for medical check-ups and diagnoses. X-ray

technology, unfortunately, will remain unreachable without some degree of laboratory sophistication.

Reinventing modern medicine

Almost all of the fancy drugs, pills, and tablets we use today are synthetic and derived from real-world, natural products. You might already be familiar with quinine, the anti-malarial substance found in cinchona tree bark. Willow bark is also effective for treating back pain and also to lower a fever. While tea tree oil is famous for its antiseptic properties and digitalin – a foxgloves extract – is even useful for bringing an irregular heartbeat under control.

But of all the medicines to reinvent, painkillers are probably the most important. Although painkillers don’t actually treat the underlying causes of a problem, they are among the most commonly taken medicines in the world. Pain relief is also an essential prerequisite for surgery.

Two natural extracts that offer some mild pain relief can be found in chili pepper and in mint plants. Both work on opposite ends of the spectrum, with chili pepper masking pain with its illusory fiery burn, and with mint working to drastically cool an area of the body (a bit like how Tiger Balm works today).

But the best painkiller is opium, the milky pink sap which oozes out from the flowering poppy. To harvest opium, take a knife and make some shallow slices in the plant's swollen seed pods. Wait for the sap to pour out, and for it to dry into a black crust. Then scrape up the black crust – which contains morphine – and use it. This painkiller is so good that even today almost all painkillers are extracted from poppies.

There is a danger with natural medicines, however, and that is a matter of dosage. After all, administering too much of a dose can sometimes be lethal. Unlike the carefully controlled concentrations in modern-day medicines, unfortunately, the application of these natural medicines will have to be a trial and error process. Our technological civilization had to wait for the late 1940s before it got this bit right, and you will also have to. But it will be a start.

Reinventing surgical procedures

Before you can even start thinking about surgery in a post-apocalyptic world, you will need your A-game. Actually, three A games. That's 'anatomy', 'asepsis', and 'anesthesia'.

For 'anatomy', it is vital that you develop a comprehensive road map of the inner structures of the human body. This knowledge must include a sound understanding of the functions of each of the organs and what they look like, not to mention the paths of all the major blood vessels and nerves. Even if you manage to salvage some of the appropriate academic textbooks, it still might not be enough. Meaning if there is a body at hand, it will be for the benefit of future living persons if you practice on them.

The second A, asepsis, refers to "the absence of bacteria, viruses, and other microorganisms". It is the principle of stopping infectious agents from entering the body while the surgery is being conducted. To make a truly aseptic environment suitable for a surgical operation to take place, a

scrupulous cleaning is first necessary. Wash the place down with an ethanol solution that’s at least 70 percent, and make the patient wear sterile robes. If you are doing the surgery, you will also need sterile clothing, including gloves, a sterile makeshift mask, and some surgical instruments that are heat-sterilized.

The third A, anesthesia, does nothing to cure or kill germs but is essential nonetheless. Without some form of anesthetic, surgery is an immensely traumatic experience (and should only ever be a last resort).

The so-called ‘laughing gas’, or *nitrous oxide*, was the first gas to be recognized for its anesthetic applications. Inhale so much, and you will be rendered unconscious to the point where suitable dental and surgical work can be carried out. Laughing gas is a natural by-product of the decomposition of ammonium nitrate (when heated). You can make ammonium nitrate by reacting nitric acid with ammonia, and then capture and cool the escaping gas as it decays. (Don’t heat it too much though, past 240°C, laughing gas can be explosive.) The gas itself can then be cleaned of impurities and cleaned by bubbling it through the water.

Laughing gas itself can be merged with other anesthetics for greater effect. One such anesthetic is called diethyl. You can make this particular substance by mixing ethanol with a strong acid (such as sulphuric acid) and by then distilling the mixture as it reacts. Diethyl has the bonus effect of not only rendering a person unconscious and providing pain relief, but it also helps the muscles to relax – these attributes all make it a create candidate for performing surgery.

Reinventing germ theory and

microbiology

In *Earth Abides*, the famous post-apocalyptic novel, the lead protagonist resigns to the fact that he cannot save humanity from relapsing into a simpler way of life. If this happens in real life, then it won't be long before the knowledge that we take for granted becomes 'lost'.

Germ theory – the discovery that most illnesses are caused by microscopic creatures – is one such fact that may be lost. But armed with this knowledge, you should be able to construct a rudimentary microscope to see the germs with your own eyes.

Start by getting a hold of some quality, clear glass and heat and draw the glass out into a thin strand. Then melt the glass at one end over a hot flame so that it starts dripping. Do this often enough and with luck, the drips should produce some tiny, perfectly spherical glass beads.

Then find something to stick the bead in, such as a piece of wood or metal, so that you can hold the glass up and peer through it. Then look at a sample. Thanks to the warping of the glass into a very tight curvature, you should have created a glass bead with a very powerful focusing effect. So that when the light passes through it, it reveals the microscopic world to us. In fact, this is exactly what the microscope's inventor, Antonie van Leeuwenhoek, did. He studied his own diarrhea to see the root of his problems: a protozoon, which

he referred to as ‘animalcules’.

Do this, and you alone will have kickstarted germ theory again – single-handedly advancing society forward potentially by thousands of years. Do all of the above and you will have single-handedly laid the groundwork for so many of the modern miracles of medicine that we each take for granted with every passing day.

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