COLUMN: THE FUTURE IS NOW

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Have you ever wondered what it would be like to live in the future? To be able to explore the Milky Way and travel between galaxies? To be able to lift buses with an exoskeleton and have other body augmentations that would give you superhuman powers? To have eradicated disease, hunger, poverty, and human misery and put in place robots to serve us food and drinks? Often, I find myself wondering what it would be like and marveling at all the possibilities for mankind. This image of the future might be slightly romanticised, but certainly not impossible or even improbable. For example, in his book *Homo Deus*, Yuval Noah Harari paints a similar picture of the future of mankind [1]. The future of medicine is more relevant to us but no less exhilarating. Imagine if we could inject nanorobots to cure cancer or recreate tissue to replace burnt skin.

What if I told you that currently, we are living in this future? A review in Advanced Science in 2020 accurately describes the *in vitro* tests currently underway for the plethora of medical appliances of nano- and microrobots [2]. The development of artificial skin is proven to be hypothetically possible; only financial and time barriers currently exist [3]. But apart from these science-fiction sounding future possibilities, let us look at the achievements of modern medicine now.

With an extensive vaccination program, we have completely eradicated smallpox from the face of the earth. Other diseases such as measles, mumps, rubella, and polio are all on the brink of extinction and do not need to cause any significant harm to people due to endless treatment possibilities. The greatest disaster to befall mankind, the plague, has been reduced to 1000-2000 cases a year worldwide, with a mortality rate that is six times lower than in the pre-antibiotic era [4]. Keep in mind that these numbers consider all different kinds of "plague", not only the most famous one *Yersinia Pestis*, also known as The Black Death. But even more science-fictionally, some estimate that the current generation will live well over 100 years old, we have developed bionic limbs, and we are making preparations for interplanetary travel.

We may not always realize it, but we are currently living in what seems the future. More accurately, we, the Western world, are living in this future. Because in Pakistan, Afghanistan, and Nigeria, polio is still endemic [5]. People from rural villages in Africa and the Polynesian islands might have never heard of an MRI scanner. In Bangladesh, some mothers are dependent on non-governmental organizations (NGOs) to provide maternal services during childbirth at home in the urban slums [6]. Students I have spoken to who have participated in clinical internships in third-world countries often say they are astounded by the sheer lack of everything healthcare providers have to work with in those countries.

We, well off inhabitants of first-world countries, are lucky enough to already be living in the future. Maybe it is time that we shed our science-fiction vision of the future exoskeletons and body augmentations. Perhaps it is time that we see that the future should be that everyone has access to the same healthcare, amenities, and services that we do. After that, we can develop that drink-serving robot to be enjoyed by everyone.

I agree with Guus that the future is *now*! Technology is developing at a rapid pace and sometimes it is not easy to keep up. Most technologies have enormous potential to bring increased safety, security, and health benefits to people all over the world. However, translating innovations in just a way that everyone can benefit from it is, just like Guus describes, not easy. The challenge is often to align two different worlds that don't speak the same language, and above all don't have the same financial resources.

At our institute, we incorporate best available research with clinical expertise and patient's values to support clinical decision making. I know that a lot of the issues raised in our guidelines don't match those in second- or third-world countries. For example, recently we introduced a new imaging modality for the diagnosis of prostate cancer, while in some countries prostate cancer does not appear in the national registries.

As an early adapter, I am fascinated by all the new techniques that have been introduced in healthcare over the past few years. These techniques are pushing the boundaries of our healthcare systems. However, we cannot deny the inequalities around the world. I do think that it is our mission, to not only implement new techniques in our first-world systems, but also to introduce new treatments in second- or third-world countries. One cannot exist without the other. And of course, I am curious whether we could print a bionic limb in five years from now.

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