

WEEK 4 MEDICINE & THE ARTS – REPRODUCTION AND INNOVATION
INNOVATION AND ENTREPRENEURSHIP IN MEDICINE

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I'm going to tell you a short story of my journey in innovation. I started as a young doctor, bright eyed and bushy tailed, and I went to Namibia my first experience as a doctor running two obstetric wards without medical supervision. Realise there were only 25 incubators in the entire country in the public sector and low birth weight rates of 17%. What were we to do with all the many newborn babies born premature and low birth weight? And they ended up multiples, two or three of them in an incubator or wrapped in blankets and newspaper. And I came across something which is now quite well known called Kangaroo Mother Care and skin to skin care.

This was not a high-tech solution to a problem and not even a low-tech solution to a problem. It was a no-tech solution. And it demonstrated to me the power of solutions that could transform the health outcomes. But also the roles that we play in a health care system.

KANGAROO MOTHER CARE



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So skin to skin care or Kangaroo Mother Care does more than provide warmth and bonding between a mother and child, and it does that very effectively and reduces the mortality rates of premature babies in developing countries by almost 50% but it also empowers mothers to play a different role of health care workers. The providers of care.

This started me thinking about the role of innovation in health care. And I'm now doing research in an area called social innovation very simply, the creation of new products, processes, and services that create social value.

But what's interesting about thinking about the social sector and health care as one of the sectors is that they are complex systems. They are dynamic systems where single interventions, single solutions, do not necessarily and usually don't solve the entire problem. And they often create other consequences in the dynamic system.

So further definitions of social innovation go beyond the creation of new products, tools, services, and programmes that create social value, but also those that start to change the underlying norms, root causes, authorities, roles, and power relationships in how systems operate. That's important when thinking about the complexity of our world and the grand challenges we face before us in health care and as a society at large.

So let's think a little bit around the process of innovation. From the commercial world, from the world of management sciences and technological sciences, we've learnt that the process of innovation has many stages. It often starts with ideas. In social innovation, it needs to have a step before that. And that's really understanding the context and the needs within which or for which we're innovating. This is critically important that we don't develop new sexy technology that we try to apply to something in health care but it doesn't really address the real roots of the problems. So understand the needs and the context.

Ali Reza earlier in this programme spoke about creativity and design. In the process of innovating, the design thinking process is used quite a lot to develop relevant ideas and solutions. But ideation is not enough. There are many ideas. How do we really get them to implementation and to impact? We need to go through the next stages of the innovation process of prototyping, of testing, of iterating, a failing, and of learning.

Failure is a critical step that needs to be embraced. It needs to be embraced because it's filled with lessons. And many of the greatest solutions, advances, innovations in our world had been built on hundreds of failures that came before. What do we do with it? How do we move past it? What do we take from them?

Finally, as we've iterated and attempted new versions of our prototypes of interventions and we've created some evidence around what works, we look to scale and diffuse. And that sums up what's called the innovation spiral.

I want to show you a small example of something developed in South Africa. It's a foetal heart rate monitor measuring the heart rate of a baby in utero during pregnancy and during labour.

FOETAL HEAT RATE MONITOR



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It's a critical decision making tool for a midwife or doctor to be able to determine the status of the baby and determine whether pregnancy and labour is safe to continue or whether measures need to be taken to expedite delivery.

In many places in the world, this simple technology, Doppler technology which has been around for many decades is not available. So we need to be innovating not only about the new products and technology, but how we make them appropriate and accessible. So this is understanding the context, the context within which many of these midwives operate. And even when I worked in Namibia, I often operated with a head torch on because of the erratic electricity supplies.

So this has a windup mechanism, which generates electricity for midwives in rural areas, in mobile clinics, or just walking around the wad. And simply, it is robust. It can be dropped without breaking. It has no consumables. So the supply chains don't get disrupted. And it is very easy and simple to use. So these are some of the design principles that have been developed in creating this device.

I'll quickly demonstrate it to you. One of the other consumables is gel that's used for Doppler. And in this case, I'll use some water because the technology allows this to take place. Measure my own heart rate.

So we've talked about the process of innovation to address needs and fix problems. But I also want to demonstrate the importance of a different way of thinking, not only of the paradigm of problems, what we call the corrective paradigm. How do we fix this problem? How do we fill the gap? What does this community not have that we can provide? But rather to think of a paradigm of transformation and of possibility. Of how can we re-imagine what health care could be?

We've got very excited as a society and as a civilisation about mobile phones and what it could do for us, how we could communicate, how it could transform how we share information and learn, how we transact with each other. If we can take that same positive creative possibility thinking into how we shape our societies and how we shape our health care systems,

Possibility thinking for transforming health care

I believe we'll be developing solutions that could transform health care systems in ways that we feel are very stuck today.

One small example of that from Cape Town is an organisation called Mothers to Mothers, which re-imagined what was possible in delivering HIV care by empowering mothers who've gone through the process of being diagnosed with HIV while they're pregnant, having their children safely, reducing the transmission of HIV, and using them as not only counsellors but caregivers in groups to other mothers who were newly diagnosed. This totally re-imagined what we thought of as to who health care workers really are, what roles they should play, and it starts to challenge the rules-- as I discussed in the beginning around the way things currently work.

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The last thing I want to address is this concept of interdisciplinarity and how critical it is to the development of innovations and new ideas that can have systemic impact. I talked initially about complexity in that we live in a complex world. And just like the human body, we have the brain and the heart and all our organs and the infrastructure that it's built on the skeletal-muscular muscular system and how those interact with each other and yet play very different roles.

Similarly, when looking to create a functioning intervention or programme or solution, we need different sets of skills, technical skills, creative skills, medical skills, and artistic skills. The combination of those will lead us to far more viable interventions that most likely will be sustained through their interventions if we have the sum of many different parts working together.

So that's what I'll leave you with today, and I hope you'll explore many social innovations emerging around the world which are really looking to advance health care in non-clinical ways and improve the status of both the health of individuals but also of communities.



Francois Bonnici, 2015

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