



Christians and Medical Research

By Sam Leinster
and Helen Barratt

Although only a minority of doctors will be actively involved in research, all doctors will feel its impact. The implications of research findings are also often the subject of popular discussion. It is therefore important that we all understand the assumptions, methods and challenges of research. For Christians, there is the added challenge of developing a biblical understanding of the utility and limitations of research.

Research is central to the safe and effective practice of medicine. Developments in molecular biology over the past 50 years have affected our understanding of normal human biology and pathophysiology, and new drug development is now often targeted against specific molecular receptors and mechanisms. This in turn requires new, more sophisticated approaches to running clinical trials to target the subset of a disease population who display a specific molecular marker. New approaches to population-based research have also been developed, as simple descriptive epidemiology has given way to complex study designs needing complicated analysis, made possible by the rise of computer power.

Until the late 20th century, medical research was either laboratory-based or focused on a statistical approach to knowledge. Both approaches are rooted in a positivist paradigm (see Glossary) which assumes there is an absolute reality to be discovered - or in other words, there is a

world out there for us to measure objectively and investigate. The task of the scientist is to uncover that reality. This paradigm has been responsible for the rapid technological advances that have transformed healthcare over the last 75 years.

However, there has also been an increasing recognition that other influences, such as psychological and social factors, play an important part in health and illness. While there is a substantial body of experimental and quantitative research (Glossary) in psychology, data in this field is usually collected using qualitative interviewing techniques (Glossary). This is carried out within a different postmodernist paradigm (Glossary) in which knowledge is socially constructed (ie created by us). Meaning depends on the individual interacting with the data as they interpret it, rather than being a description that can be generalised of an external and independent reality.

This *File* takes the form of a discussion between a junior researcher, Helen, and Sam who has been actively involved in research in a variety of fields for over 30 years.

Is it right to do research?

So... why should I do research? Isn't it more important that I'm working on the 'front line', treating patients and speaking to them?

While the General Medical Council's guidance *Good Medical Practice* defines the first duty of the doctor as the care of the patient, it also makes it clear that providing that care requires the practitioner to 'provide effective treatments based on the best available evidence'.¹

Valid evidence can only be obtained through properly designed research

studies, so at a purely pragmatic level, being involved in research is an intrinsic part of delivering patient care. Not every doctor needs to undertake research personally, but everyone needs to understand not only how it is done but also how to apply the validated results.²

I believe there is also a biblical imperative. Scientific study is based on the presupposition that the universe is rational. If it is not, then any attempt to study it is futile. Because the universe is rational, it is predictable within certain statistical parameters and therefore open to experimentation. For the Christian, the rationality of the universe is the result of its creation by God. Because the universe is created by God, we have a two-fold responsibility towards it: we are required to preserve it and we are encouraged to explore it. The latter constitutes the Christian's mandate for research.

Tensions between worldviews?

Many people will be surprised you claim research is biblically mandated. We're often led to believe there is a fundamental tension between the scientific worldview and the Christian worldview.

It would probably help to define the scientific worldview, because the term is often used rather loosely. Credit for introducing the scientific method is usually given to Francis Bacon (1561-1626). In his view, the essence of science was making structured observations and from these developing general laws and theories by a process of induction. Deductions from these laws and theories lead to predictions and hypotheses which can be tested in properly designed experiments. If these predictions are borne out in practice, then the theories can be accepted as true.

The problem with this straightforward scheme is that it is based on the assumption that observation is objective. However, it is now well established that observation is altered by perception and is, in fact, theory-driven. That is to say, we see what we expect to see. This is the basis for many optical illusions.

Bacon's scheme was refined by Karl Popper (1902 -1994). Popper's insight was that hypotheses can never be proved ultimately. The aim of science is to attempt to disprove the current hypothesis which is held tentatively until new data leads to a new hypothesis (Figure). A hypothesis is valid not because we can devise a test that will prove it to be true, but because we can devise a test which could prove it false. This Popperian view has predominated in thinking about science for the last 50 years.

Whichever philosophy of science is espoused, at the heart of the scientific view is the assumption that the universe is governed by stable, rational laws which can be discovered by appropriate methods of investigation. This is entirely in keeping with the biblical viewpoint.

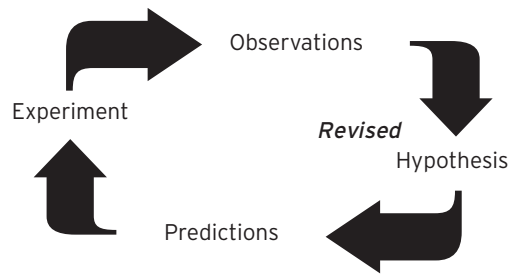
Where do qualitative methods fit in?

But what about qualitative methods, such as interviewing techniques? As you said before, the rationale behind these is totally different.

I think it is important to distinguish between the qualitative methodologies themselves and the philosophy of some of their proponents. I do not see there is a necessary connection between the two and I am quite happy to use qualitative methods when these are appropriate for the research question that I am answering. After all, I do not reject the methodology of the biological sciences because some of the proponents of those methods are militant atheists who would deny God any role in the universe.

There are times when I want to know how a particular group of people in particular circumstances think or feel. For example, how does a selected group of 4th year medical students react to a given professional situation? In my view, the

Hypotheses cannot be proved; but they can be falsified (Popper)



only acceptable methodologies for this type of question are qualitative ones. While I can't claim to have uncovered some *absolute reality*, I can claim to have uncovered the reality of what is happening in that given situation. My findings may not be generalisable to all people in all circumstances, but I can reasonably assume that other medical students with similar experiences will have the same attitudes.

It is part of the qualitative process that I should explicitly recognise my own biases in interpreting the data, but this is different from saying that my findings are entirely subjective. I am implicitly assuming that the findings from my study will be congruent with the findings from another study conducted on the same population.

I am not sure that those who follow the post-positivist paradigm (Glossary) are entirely consistent in their behaviour. Why carry out research unless there is something measurable? Why do it if the results are entirely subjective? Research proceeds on the assumption there is something that must be independent of, though clearly influenced by, the observer. (The effect of observation applies to sub-atomic particles as well as to human beings.) There would be no point in studying patients' compliance with medication, for example, unless we believed there was some *thing* which influenced it that was amenable to manipulation and modification.

For the Christian, God is the only absolute reality, but even our knowledge of him is incomplete.³ Therefore, in an intellectual sense we cannot claim to have grasped absolute reality. Our certainty is based on the relationship which is possible with God through his revelation to us in the

person and work of Christ, not on our ability to explain him. For the scientist, whether the methods used are quantitative or qualitative, theories represent the best description of things as they are, given our present level of knowledge.

What are the limits on research?

Great. Research is a good thing, and part of our biblical mandate, but is there not a limit to how far we should go? Research using stem cells from human embryos would be one example...

I think this is one of the major challenges we face today. Modern society is characterised by a growing expectation that all illness will eventually be conquered if only enough resources are put into medical research. The corollary of this belief is a deep suspicion of any suggestion that there may be ethical limits to research, especially if these derive from faith. Indeed, there seems to be a perceived conflict between the Christian duty of compassion and the suggestion that some forms of research should be banned on moral grounds.

The clearest current example of this is, as you say, embryo stem cell research.⁴ All discussions about its ethical standing are brushed aside with the promise that it holds the key to curing all manner of chronic diseases. Quite apart from the fact that little evidence has yet been produced that it will have the promised outcomes, the argument that the end justifies the means is flawed.⁵

In the real world, however, research will inevitably be limited by *resources*. Whether the research is funded by public or private sources, there are always conflicting claims on finances. Research will also be

limited by the *risks* involved. It is clearly irresponsible to carry out a research programme unless the potential benefits outweigh the potential risks.⁶ In medical research in particular, there is a further limitation and that is the *rights* of the subjects involved. Legally, these are enshrined in the *Human Rights Act*⁷ and ethically they arise from notions of human worth.

What are the limits with human subjects?

Are there any limits to involving human subjects in research?

The General Medical Council has issued clear guidelines on involving human subjects in research.⁸ In clinical trials, for example, patients who are the subjects of the research may benefit directly if they are in the treatment arm. Those in the control group do not benefit directly, but their participation results in benefits to future potential patients as the experiment cannot be interpreted accurately without their involvement. It is a tribute to the altruism of the majority of people that so many agree to inclusion in placebo controlled trials knowing they may not actually receive the new treatment.⁹

Research on children raises further ethical questions, as the children may not understand the implications of the proposed study and cannot give informed consent. Third person consent for treatment, from a parent or guardian, is easy to justify when the proposed action is likely to result in direct benefit to the patient. It is less easy to justify when the child may end up in the control group and not receive direct benefit. This can give rise to problems - many potentially useful drugs are not licensed for use in children because the relevant studies have not been carried out.

For the Christian, respect for the patient and the worth of the individual are based on the concept that humans are made in the image of God.¹⁰ While emphasis has in the past been placed on the ability to think, to choose and to create as the main evidence of God’s image, the ability to relate to others may be more significant. God is a triune being, and relationship is

intrinsic to his nature. Every individual who has ever lived has been loved by God and is, therefore, of infinite worth.

This apparently innocuous statement raises a number of difficult issues, and we must recognise these are questions on which Christians disagree. For example, what is the status of a patient in a persistent vegetative state? Or when does an embryo become a human being? When disagreement occurs, we must act in humility and love, but our answers to these questions will influence our views on where the limits to research should be drawn.¹¹

What about research on animals?

Animals models are key to much basic research, but what about those who oppose this and say animals should have the same rights as humans?

There is a long tradition of using animals in medical research, and many of our current advances would perhaps not have been achieved without the use of animal models. The argument has been that we are justified in using animals in experiments to improve the lot of humans because humans have more intrinsic worth than animals.

The philosopher Peter Singer contends that in taking this view we are guilty of *specieism*. In his view, worth derives from factors such as self-consciousness and rationality.¹² On this basis a higher mammal has more intrinsic value than a patient in a persistent vegetative state, for example, so animals should be afforded the same rights as competent humans.¹³ Since animals are not capable of giving informed consent, it is asserted they cannot therefore be used legitimately in research. However, there are still many valid questions that cannot yet be addressed without the use of animal models. Again, this is a disputed area where a spirit of open discussion is necessary.¹⁴

A minefield for Christians?

Being a Christian in research seems to be a minefield. Even as an early career researcher, there is real competition to get grants and to

Glossary

- **Paradigm** - a philosophical or theoretical framework within which are formulated theories and laws, and the experiments performed in support of them
- **Positivism** - a branch of science which holds that the scientific method is the best approach to uncovering the processes by which both physical and human events occur
- **Postmodernism** - a tendency in contemporary culture characterised by the rejection of objective truth
- **Post-positivism** - a branch of science which holds that human knowledge is based not on unchallengeable, rock-solid foundations, but rather upon human conjectures. For example, Karl Popper advanced falsification as a critique of the logical positivist idea of verifiability
- **Qualitative research** - aims to gather an in-depth understanding of human behaviour and the reasons that govern such behaviour; for example, using interview techniques to investigate the why and how of decision making, often using small focused samples
- **Quantitative research** - the systematic empirical investigation of properties that can be measured and enumerated in order to develop theories or hypotheses

prove you’re better than your colleagues. How on earth do you maintain any sense of focus on God or maintain humility?

Research is no different from any other professional activity in this regard. Even clinical service can be carried out with an eye to our own advancement rather than the patient’s interests. However, I agree that the challenges in research are greater. The prevailing ethos in academia has shifted from research being a means of advancing knowledge, to research being a means of advancing one’s own career or institution. As a result, individuals come under pressure to perform effectively, which means getting grants and publishing papers. This pressure is likely to intensify as the available funding falls and competition becomes greater.

As Christians we must remember that our ultimate responsibility is to God¹⁵ and our aim in doing research, as in everything else, is to glorify God.¹⁶ For example, by carrying out basic research we are expanding our understanding of the wonder of creation and therefore enlarging our understanding of the wisdom and power of God, which should lead us to a deeper sense of worship.

If we are to keep that focus on God we must maintain a proper balance in our lives. The more absorbing our research becomes (or the more pressure our colleagues put on us to perform), the more important it becomes that we give time to our spiritual growth, including spending time in worship, prayer and study with other Christians.¹⁷ Apart from the spiritual benefit, it is a simple fact of psychology that taking regular breaks from a task is more productive than constant application.

I have to admit that the question of humility is one I continue to find difficult. Part of the problem is a misunderstanding of what humility is. It is easy to get it confused with false modesty which underestimates one's gifts and abilities. Paul instructs us to 'think carefully about our gifts'.¹⁸ Humility comes in recognising that our gifts do not make us better or more important than anyone else, but they do define the task that God has called us to. Research is as much a calling as clinical care or overseas work.

How much should we spend on research?

I'm applying for large grants to fund my research. Wouldn't the money be better spent elsewhere?

Direct patient care is not necessarily the best, or most effective, use of money and we have a responsibility to the wider community as well as to the patients we are caring for immediately. If the money that went into our research on c-erbB2 (now better known as her2) had gone into direct care, its effects would have been transient. Instead, it contributed to the ultimate development of the breast cancer treatment herceptin which has been of benefit to a wider population of patients.

Will the outcome of your research potentially improve patient care or public health? Will it increase our knowledge of basic human biology or behaviour? If the answer is yes, then spending the money makes good economic sense. I realise this does not answer the question with regard to other areas of academic study, such as Egyptology or astrophysics, but you ask the question in the context of healthcare.

Conclusion

As Christian academics we straddle two worlds which can at times seem opposed to each other. It is widely accepted that religion and science are mutually exclusive, but it is part of our task to show this is not true. All truth is God's truth and science reveals the wisdom and power of God. It is also part of our task to maintain the highest ethical standards within the research community, striving for the highest standards in research and thinking.

Within the church it is easy for an academic or researcher to feel a second

class citizen, compared for example with those called to work overseas. When one is confronted with the challenges of healthcare needs worldwide, it can seem self-indulgent to spend time investigating a small but fascinating topic apparently relevant only to a highly selected group. There are even times when one looks with envy at colleagues who are doing things that are highly respected by the wider Christian community. It is important, however, to remember that God has called us to *this* task and that our efforts are directed towards pleasing him, not other people.

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16. 1 Corinthians 10:31
17. Hebrews 10:25
18. Romans 12:3 (The Message)

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