Guest Editorials: Response to Friends of Science in Medicine

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Medicine, Science, Arts and Friends: What do we make of the claims made by Friends of Science in Medicine (FSM)?

EDITOR’S NOTE: FSM is an Australian organisation that was formed at the end of 2011. It claims it has now more than 700 members from medical and other health and non-health related disciplines. The founders of FSM were concerned with ‘pseudoscientific’ health care that have wasted ‘our taxes’ in funding the treatment and the tertiary education of relevant courses. They claim that modern medicine should be based on ‘scientific evidence of effectiveness’, and complementary and alternative medicine is ‘fraudulent’, ‘misleading’ and ‘comprising the health of the public’.

So how do Chinese medicine practitioners think and respond to the claims made by FSM? We are fortunate to have a panel of experts from different fields to help us analyse and think of the recent events. They help us broaden our view on a number of aspects. What is medicine? What is science or knowledge? Is medicine science or arts? What is the evidence supporting FSM’s claims? How rigorous FSM’s methods are in arriving at their claims? What is tertiary education for? How is FMS compared with fundamentalism in religion?

Our thoughts are very much stimulated by the panel’s analysis and ‘dissection’. We hope you too find the discussion thought provoking.

Friends of Science?

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Complementary medicine treatments are used by two in three Australians each year and have been taught in Australian universities for two decades. The negative media campaign initiated by the self named ‘Friends of Science in Medicine’ (FSM) is an unfortunate and retrograde step for the progress of science and openness in healthcare. It reflects a dismal view of scientific debate and a shameless push to censor learning. The FSM appear to be campaigning most explicitly against university education of complementary medicine practitioners and urge caution against investment in complementary medicine research. To this end the FSM have been lobbying university vice-chancellors and a wide range of scientists, both clinical and non-clinical.

Rigorous testing of all modalities of healthcare, including complementary medicine, and the promotion of evidence-based clinical practice is important. However, ‘evidence-based medicine’ is a relatively new approach and many current medical and allied healthcare practices have not been rigorously tested.

We need to continue to intensively study and teach about therapeutic foods, medicinal herbs and pharmaceutical drugs in universities, each for their important roles. Herbal medicines generate one of the most important scientific challenges in medicine in that combining small amounts of compounds
The FSM campaign should be opposed because:

1. It draws insufficiently on discipline expertise and current evidence in complementary medicine.

2. It weakens our National Medicines Policy approaches to strengthen the development of evidence-based practice through further research and to better inform health care decisions in complementary medicine.

3. It ignores the important connectivity between research and education in universities.

4. It encourages a sense of shame amongst complementary medicine users and undermines open communication between patients and carers.

5. It does not recognise the important clinical contributions that are likely to emerge from further exploration of practices such as Chinese herbal medicine and acupuncture.

6. It implies (incorrectly) most other taxpayer funded healthcare practices have sound clinical evidence bases.

7. It dismisses individual choice in healthcare and assumes no scientific evidence means no practice evidence at all.

The Art and Science of University-based Complementary Medicine

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The Friends of Science in Medicine (FSM) group have recently launched a campaign aimed at stopping universities teaching acupuncture, herbal medicine and other forms of complementary medicine which they claim are ‘unscientific’. They further aim to pressure health insurance companies to stop paying benefits for these therapies. The FSM campaign however, is based on emotive referrals to ‘pseudoscience’ and ‘quackery’ and reference to various media reports, rather than drawing on any published evidence or scientific arguments. This group also fail to recognise that medicine was an art long before it was a science and that an overemphasis on a single, narrow-minded view of science, can leave patients inadequately treated and without hope, care and compassion.

Patients often suffer despite having been treated with the best medical science has to offer, yet there are a range of safe natural therapies which, although not fully understood, can provide profound relief for such patients. There are also many intangible elements in medicine which science is still discovering. Many of these elements are captured in traditional medical systems and to lose them due to an overemphasis on science would be to leave patients to suffer.

That is not to say that modalities such as acupuncture and herbal medicine are without a scientific basis. Certainly, there is strong evidence for these modalities based on generations of empirical science and traditional use, as well as mechanistic animal studies and human clinical trials. More than a decade ago it was argued that acupuncture can be considered a part of mainstream medicine and it has now been reimburged by Medicare for more than 30 years and is now offered as standard care in some emergency departments with emerging evidence suggesting that acupuncture is comparable to pharmacotherapy for providing analgesia in this setting.

While medicine certainly needs to be informed by science, this has to be done cautiously. Medical science can be fickle and has brought us many treatments such as thalidomide, hormone
Where does the evidence lie? A response to the recent media blitz on Chinese medicine and acupuncture

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It was with both amusement and concern that I observed, and later had the opportunity to participate in, the recent media blitz on complementary medicine, and, in particular, acupuncture and herbal medicine, that occurred in the first part of 2012. This blitz revolved around three separate-but-related issues, these being whether complementary medicines should be taught in universities, led by Friends of Science in Medicine (FSM); the opposition of the Australian Medical Association in questioning whether Chinese medicine should be regulated; and the recent publication of the DNA contents of smuggled Chinese herbal products that were found to be contaminated.1

Three separate-but-related issues, which while coming from separate sources, aimed at denigrating acupuncture and Chinese herbal medicine.

The first instance involved a concerted effort by the FSM in writing to the vice-chancellors of universities teaching complementary medicine and questioning whether the courses should be in publically-funded institutes of learning. As an active researcher in a university it was interesting to note that while they focussed on the scientific validity of many of the complementary practises behind a therapy does not mean we should not use it. We still do not know how much anaesthetics work yet they are used routinely for the benefit of countless patients and just because acupuncture meridians cannot be found anatomically, does not mean they are not useful. Similarly, you will never find the equator or the earth’s lines of longitude or latitude by digging, yet they are still useful constructs for navigating the planet.

In my medical training I was taught the central dogma of molecular biology that genes control the cell, this has now been shown to be false. Similarly, dogma has existed in some natural medicine courses. We should not have any health graduates who rely on blind faith – including blind faith in the science of the day. We need graduates who are able to be independent critical thinkers and life long learners who can see beyond dogma of any kind and undertake their own critical scientific inquiry. It is clear that this is best done in universities where practitioners can learn to integrate the best of current medical science with the art inherent in ancient traditions and become informed, thinking human beings and compassionate, caring practitioners.

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need even more institutional support as quality control and safety are additional concerns for herbal research. As to the evidence, a similar level to acupuncture can also be found for Chinese herbal medicine as well. A 2009 study that reviewed 50 reviews concluded that ‘23 reviews were reported as being inconclusive, while 27 concluded that there might be benefit of CHM (Chinese herbal medicine)’. A more recent review of the quality of Chinese medicine reviews found that of the 42 reviews they assessed ‘22/42 herbal medicine reviews concluded that there was not enough good quality trial evidence to make any conclusion about the efficacy of the evaluated treatment, while the remaining seven acupuncture and 20 herbal medicine reviews … indicated a suggestion of benefit’. It is also helpful to remember that insufficient evidence does not mean no evidence. As usual the reviewers of both of these reports highlight the need for high quality, well designed, statistically powered studies which can only be achieved in (yes, you guessed it) well-resourced institutions such as universities which I can only whole-heartedly espouse as well.

The second issue revolved around whether Chinese medicine should be regulated by the Commonwealth government in that it gives some type of kudos or acceptance of its practice. In fact, national registration (and I am sure you already aware) is to protect the public and has nothing to do with support or validation of the practice of any type of complementary therapy or product. It identifies to the public that any registered Chinese medicine or acupuncture practitioner they choose to consult has met certain criteria including a high level of education and ethical practice. In addition registration gives authority to the Chinese Medicine Board of Australia to deal with any unscrupulous or unethical practice that does occur infrequently in any medical or allied health profession. One only has to look at the records from the Victorian registration experience to see it can be achieved effectively.

Finally, the issue of the 15 traditional Chinese medicine (TCM) smuggled sample products that were assessed using high-throughput sequencing (HTS) of DNA and subsequently found toxic and endangered animal and plant species. This incident only emphasises the effectiveness of established regulatory systems for Chinese herbal medicine in Australia and the responsibility that both the Therapeutic Goods Administration (TGA) and the Australian Quarantine and Inspection Service (AQIS) have in ensuring that only safe and quality products are allowed into the Australia market after rigorous evaluation. While the media jumped on the contamination issue, little notice was taken of the fact that these products were not on sale in Australia and that, rightly, they had been confiscated before entering Australia.

Despite these recent unsupported and often inaccurate media assertions Chinese medicine still has a huge task ahead before it can prove itself of worth. Peer reviewed scientific journals such as this journal and the efforts of research colleagues in CompMED (University of Western Sydney) and RMIT University, as well as other pockets around Australia, are essential in developing the emerging evidence base for Chinese medicine and need the support of the profession. To paraphrase President John F Kennedy ‘don’t ask what the profession (country) can do for you; ask what you can do for your profession (country)’.

References


The Politics of Science

By Prof. Ian G Weeks BA, MA, PhD (Melb.)
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From time to time Chinese medicine has been attacked because, so it is claimed, it is not scientific. Recently an organisation calling itself Friends of Science in Medicine (FSM) has been established. It says that its aim is ‘to reverse the current trend which sees government-funded tertiary institutions offering courses in the health care sciences that are not underpinned by sound scientific evidence’. This organisation is not very specific about which universities or which programmes they have in mind, and they appear to lump together most, if not all forms, of ‘complementary medicines’. I think that there are several issues involved here that readers of this journal need to think about.

For several years I have been on the panel which helps to select students for the new Doctor of Medicine degree at the University of Melbourne. After an initial cull based upon results in undergraduate programmes, selectors such as myself share in administering a fascinating selection process in which students are evaluated for such qualities as empathy, understanding, bullying, the ability to listen to others, and their capacity for explaining complex ideas in direct and simple language. This process of selection had its origins in the very innovative medical training programmes at McMaster University which have been skilfully adapted for use at the University of Melbourne. It is interesting and important to see that this selection process, while making some acknowledgement of the role of science...
in medical practice, also places a strong emphasis on the human qualities of those who are chosen to train as medical practitioners. The team at the university shows an interesting historical awareness in this method of selection. It shows a clear understanding that medicine is a human and humane practice that calls upon all of the skills and abilities of future practitioners. That practice will not only be ‘scientific’ but also a humanistic practice.

The nature of science and its role in medical practice, in the West, has a considerable history. FSM seem sadly ignorant of that history. Firstly they seem ignorant of the curious history of the idea of science. The Latin word scientia simply meant knowledge. For most of the history of the western world it was thought that theology and metaphysics were the highest sciences. In the sixteenth century CE a movement began in which certain kinds of empirical research came to claim the term science. Such a claim for much of the next two or three centuries was not widely accepted. It is only in the last two centuries that this particular claim to be a science was widely accepted. That acceptance, just as the acceptance of older meanings, is essentially a political and historical matter.

By saying that the claim to be a science is a political matter I mean that the idea of a science has been and will be contested. This is also the case with all other disciplines that you find in any university. The fact that all disciplines are contested can be seen in any history of what is taught and researched at universities. I began my undergraduate studies at the University of Melbourne in 1956, which is the year in which Psychology left the Philosophy Department and became a separate discipline. Almost every discipline at all Australian universities has been created in the past 150 years. Medicine, for example, was quite late in becoming a university discipline. The same is true across the world. It should be borne in mind that the oldest Western universities are well over 800 years old. All new disciplines had to struggle to gain acceptance and funding. The fact that disciplines have to compete with others is an important aspect of the advances made in those disciplines. If there were no such competition the disciplines would soon wither and die. So the attempt to get the ‘big brother’ of the government on side to reduce or block competition from other branches of knowledge is, curiously, a strategy that would bring ‘medicine’ into disrepute and not be in the interests of any genuine science.

By saying that the claim to be a science is a historical matter I mean that the ideas of a science or of medicine have changed and will change over time, especially as they face competition from other bodies of knowledge and other claims to knowledge. The idea of history expanded dramatically from the beginning of the nineteenth century. Until then history was mainly chronology, a listing of the famous or infamous rulers, the beginnings and ends of some empires, and occasionally of great events. The expanded idea of history came to see that history is to human beings very similar to what the atmosphere is to us: history is the sphere in which human existence takes place. Everything that human beings do and think is historical – they all came to be, have changed and will eventually die out; they all reflect aspects of the wider life of the various human communities. So, all sciences have been, are and will be subject to change.

Knowledge, in all its forms, lives in the minds and practices of human beings. Knowledge is related to the paradigms and idea – pictures that we have and to what we consider most important. That is to say that any science is paradigm-dependent. So for some time concepts of physics were thought to be the basis of science and the paradigm for any other sciences. Over the last century and a half a new science – evolutionary biology – developed and it is producing some basic paradigms that are not the same as those of physics. The concept of ‘emergence’ introduced a more ‘historicised’ understanding into science. Or consider the very atomistic and reductionist accounts of knowledge that were prevalent in the seventeenth and eighteenth centuries, and the turn away from that way of thinking to ideas that are far more ‘environmental’, where the objects of knowledge are seen and understood in their various relationships. This in turn has consequences for cosmology and so for physics.

The dynamic nature of knowledge and science means that understanding a science or a practice such as medicine, requires breadth of knowledge and understanding. Those who refuse to think this way are prime examples of what is often referred to as fundamentalists. Fundamentalists divide the world into true believers and members of ‘the evil empire’. They, the fundamentalists, think that only their own way of thinking or doing is true and every other view is dangerous and wrong. As a student of fundamentalism I am intrigued in discovering in the FSM this latest version of fundamentalism – ‘scientific fundamentalism’. So these fundamentalists, as does every other kind of fundamentalist, want to turn universities into places where only their understanding is supported and taught. Such an attack on the freedom of thought and discovery essential to what universities are is always paradoxical. In the name of science it undercuts the nature of science.
In January 2012, the Friends of Science in Medicine (FSM) was launched as a new lobby group with the specific intent of arguing against the place of ‘unscientific’ complementary and alternative medicine (CAM) in universities, in private health schemes and, it would appear, medicine itself. FSM’s assault, while claiming to be scientific, was quick to use less than objective terms such as ‘pseudoscience’, ‘nonsense’ and ‘quackademia’ in attracting public attention upon its crusade against complementary medicines.

Harsh critics of most, if not all, forms of complementary medicines, FSM’s claims are also unafraid to step beyond the argument of lack of evidence in reinforcing their position. Amongst their Facebook proclaimed missions exist comments such as ‘to reduce the real and potential harm of CAM’ and the blatant statement regarding practitioners of complementary medicine and their ‘covert attempts to deceive the public’.

One asks, however, where is the evidence to demonstrate that the relative risk profiles of complementary medicine are anywhere near that of pharmaceutical drugs? Where is FSM’s proof of any intended deception by complementary medicine practitioners, a statement of itself, if applied to an individual, would border on slander?

Indeed, in the case of interpretation of evidence FSM appear to be setting themselves up as the judge, jury and executioner upon what is and is not evidence-based medicine (EBM), the gatekeeper to their proposed acceptance of complementary medicine in universities.

Consider the following definition: ‘Evidence Based Medicine (EBM) is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients’.1

Such an EBM definition importantly addresses the present environment in complementary medicine in which ideal evidence does not exist. It allows for the use of ‘current best evidence’ as guide posts in the absence of ‘gold standard’ data. In particular, evidentiary guidelines accept that the limitation in present knowledge requires a fall-back position on less rigorously achieved evidence including, importantly, Traditional Evidence (Level 5). What are we to do in the interim prior to the achievement of ‘gold’ standard evidence?

FSM would have the universities remove complementary medicine from their curriculum. This, however, begs the question, if there is no complementary medicine presence in universities, who then is going to perform the research that the FSM claim they would support?

Complementary medicine is in a difficult situation regarding the funding of research. Indeed, at this point the cynical might suggest that EBM risks pandering most to money based evidence (with all of the obvious dangers this implies … think, for example, Vioxx) than science itself.

Quality trials by their very design require sufficient funding. Where are such grants and finances going to come from, particularly in the circumstance that, unlike pharmaceutical medicines, complementary medicine products do not acquire patent protection and hence proportional return on research investment?

Furthermore, in the most likely scenario that vested industry interests provide such funding, what is the likelihood that academics would negate the results purely on the suggestion of conflict of interest?

This highlights further the question as to who should be performing such trials and interpreting the data such that it would be meaningful to organisations such as FSM. The example below provides clear evidence of the dangers when complementary medicine is analysed by non-complementary medicine interests.

In a previous meta-analysis of vitamin supplementation by Bjelakovic et al (2007) in JAMA2, highly critical outcomes were suggested by the authors. However, the meta-analysis itself, which caused popular ripples in the mainstream press as to how vitamins actually kill, was in return critically assessed by Hickey et al in the Journal of Orthomolecular Medicine (2007)3 demonstrating what they believed were valid flaws in data analysis as well as an inability to generalise the meta-analysis conclusions to a wider population.

To place this argument in context, it would be considered absurd for complementary medicine practitioners to academically assess data on surgical outcomes, for instance. What credence can be placed on the results of trials or meta-analysis performed by critical academics with an open hostility towards complementary medicine?

Non-science, pseudoscience, quackery … or a witch hunt by a biased academia?
Indeed, it might be a little easier to accept the scrutiny of medical academics upon complementary medicine if only they would apply the same rigorous standards in their own backyard. Mainstream medicine is haunted by its own dark elements, aspects of which would clearly benefit from FSM’s scrutiny such as:

- The clearly documented ‘real and potential harm’ from many pharmaceutical medicines – including Vioxx, synthetic HRT, Cisparide, for example.
- The prescription of many drugs for uses they have not been studied for.
- Academic fraud and disease profile manipulation as to increase the proportion of the population on prescription drugs.
- The rampant conflict of interest amongst medical journal articles that goes unquestioned, simply because otherwise there would likely be too few articles!
- Most post-graduate education is dominated by events and resources linked to vested interests.

This is certainly not to denigrate mainstream medicine despite its many present flaws. In particular, mainstream medicine is extremely suited to acute situations, however, falls down when applied to chronic disease.

As an Integrative Medical Doctor I value pharmaceutical medicines but realise the significantly additional benefit when my armoury is added to with safe and effective complementary medicines.

Wouldn’t a more sensible approach be for each of us to concentrate on increasing the professionalism and efficacy of our own areas of interest, rather than seeking conflict and, indeed, polarisation with the expertise of another?

In fact, what may be feared most is the interpretation that might be placed on this conflict between mainstream ‘western’ medicine and the many modalities derived from cultures that have historically accepted tradition as evidence (Oriental, Ayurveda, indigenous Australian etc).

Are we to challenge not only a modality, but a culture and even a population group’s medicine simply on the premise that they have yet to demonstrate their medicine’s efficacy according to western principles of investigation?

Certainly if science shows that a traditional medicine cannot be backed by irrefutable evidence once research has been objectively undertaken then FSM can argue against its use.

Yet a genuine scientist should be otherwise stating the case; traditional evidence provides a hypothesis for investigation, therefore there is a need to provide the research, hopefully within well-funded academic programmes, to support or refute the hypothesis.

And this is where the FSM movement shows the nature of its ultimate hypocrisy.

Let’s eliminate complementary medicine from universities, make it near impossible to undertake quality trials.

And, after which, claim there is no evidence because no trials have ever been done.

With ‘friends’ like these…

References

‘Friends of Science’ not evidence-based

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An editorial appeared in the Medical Journal of Australia on 5 March 2012 entitled “Tertiary education institutions should not offer pseudoscientific medical courses.” The editorial is authored by two founding members of the Friends of Science in Medicine (FSM) which is ‘dedicated to countering the growth of pseudoscience in medicine’; however nowhere in this editorial is any definition of ‘pseudoscience’ offered. Indeed the editorial is peppered with emotive rather than scientific language — ‘subterfuge’, ‘alarmingly’, ‘sully’.

The most concerning aspect of this editorial however is the lack of evidence for some of the assertions made. In this editorial the assessment of the levels of evidence supporting the efficacy of acupuncture is not based on primary sources such as the Cochrane central register of controlled trials which lists 5744 controlled trials of acupuncture (compared with 3301 for physiotherapy) or the Cochrane database of clinical reviews which lists 73 Cochrane systematic reviews concerning acupuncture (of which 37 are specific to only acupuncture) and 213 other reviews. Instead the authors cite a book Trick or treatment: the undeniable facts about alternative medicine by Singh and Ernst in which Ernst manages to contradict the findings of four systematic reviews on acupuncture which he himself co-authored. The rigorous editorial scrutiny which should be expected from a scholarly medical journal is sadly lacking in this case, but it is noted that the editor declares herself to be a member of FSM.
‘Medical courses have intense and regular external accreditation of their courses, but alternative medicine courses have no such safeguards’. This statement is demonstrably false. Bachelor degree courses in acupuncture offered by private colleges in Australia have undergone intense scrutiny since their inception by external bodies including state education authorities (such as the Higher Education Board and the Office of Higher Education), professional associations (such as the Australian Acupuncture and Chinese Medicine Association Ltd [AACMA]) and in Victoria the Chinese Medicine Registration Board [CMRB (Vic)]. University courses in acupuncture have also been subject not only to their own internal course approval processes but also to scrutiny from AACMA and the CMRB (Vic). In future all courses, whether offered in universities or private colleges, in acupuncture and Traditional Chinese Medicine will be overseen by both the new Chinese Medicine Board of Australia (CMBA) which sets standards for registration of all students and practitioners and also operates its own course accreditation process, as well as the Tertiary Education Quality and Standards Agency (TEQSA).

Should anatomists be asked to support the validity of acupuncture meridians? Certainly not! Given that there are currently numerous competing theories on anatomical substrates of acupuncture meridians and points (none of which can adequately account for all of the observed characteristics of meridians) it would be premature to ask anatomists to be involved in such teaching roles.

FSM apparently ‘supports research into alternative and complementary approaches when this is justified’ (author’s italics); however, the actions of FSM in sending letters to grant reviewers for the National Health and Medical Research Council (NHMRC) warning them not to approve funding to complementary and alternative medicine (CAM) research suggests that perhaps, in their view, such research is never justified. Indeed this action would strongly suggest an attempt to introduce bias into the NHMRC funding review process. How can scientific method which strives to minimise bias be compatible with the ‘Friends of Science’ campaign to create bias?

Evidence-based medicine (EBM) was originally defined by Sackett et al in 2000 as ‘the integration of best research evidence with clinical expertise and patient values’. While meta-analyses and systematic reviews of randomised blinded placebo-controlled trials are regarded as the highest levels of evidence within the EBM framework, when such evidence is not available, then the best available evidence should be used. According to a review of 3000 treatments in Clinical Evidence, 11% of current medical practices are shown to be beneficial, a further 23% likely to be beneficial, 7% trade-off between benefits and harms, 6% unlikely to be beneficial, 3% likely to be ineffective or harmful and 50% unknown. This is not a criticism of medical practice but rather a snapshot of where research is up to in providing high level evidence to support practice. For therapies which have not enjoyed strong funding support for research until very recently it is not surprising that high level evidence to support practice is less substantial than for more established therapies, however the fundamental principle of using the best evidence which is available remains valid.

FSM have even suggested that it is unethical to use any medical practice which does not enjoy the support of high level evidence. If the arguments of FSM were to be logically extended then 66% of medical practices should be immediately abandoned including surgery and psychiatry which lack support from randomised blinded placebo-controlled trials. Complex interventions, especially those which require high levels of practitioner skill are difficult to investigate with the randomised blinded placebo-controlled trial (which is more suited to simple interventions requiring low levels of skill).

Clearly FSM’s very public media campaign is not about science given the rather cavalier attitude displayed to the evidence, and the strongly emotive tone of much of their writing. It is certainly about money – federal funding to universities, private health insurance rebates and research funding. It is certainly an attack on the credibility of CAM in a broad sense and acupuncture has been specifically targeted. It is an attack on the academic reputation of universities which offer CAM courses including acupuncture. It is also an attack on the transparency and independence of the NHMRC funding process. Money and medical dominance appear to be driving this campaign, not science – or at least that is what the best available evidence suggests.

Since all good research begins with a good question, perhaps the most relevant question is who is funding and backing the Friends of Science in Medicine?

References