Why Birthdays are Good for you – A celebration of Ageing

Dr David Spriggs

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It is a great pleasure to speak to you about a topic that attracts increasing media attention and "dinner hour" discussion in the home and at work. I hope to show you that all is going very well with regards to our health and the prospects for our individual futures and the futures of our fellow citizens. I hope that by the end of this short talk you will go home relieved of a worry that has been induced by those who have stories of impending doom (financial and physical), those who see only suffering and indignity as we age and those whose primary motivation is extract your hard earned cash by telling you that the youth you probably never really enjoyed can be rekindled and it will be better the second time. I hope that you will embrace the ageing process, maximise your abilities and live to a happy and healthy old age.

So what is ageing? I should just divert for a moment of semantic discussion. The Science of Ageing is commonly called Gerontology. My ex-boss, Prof Gimley-Evans when he was appointed to the chair of Gerontology in Oxford, pointed out that this is a feminine Greek word and the appropriate title for the chair was that of Geratology. If there is confusion about the name of the science of ageing there is complete pandemonium about the definition of ageing itself. It is rather like trying to define beauty: everyone knows what we mean but no-one will agree to a consensus definition. The essence of ageing is that it is firstly **universal**. Remember that ageing is not just a biological phenomenon, it happens to solar systems, Planets, continents, civilisations, philosophies, buildings, individuals, organs and even different cells with an organ.. Secondly Ageing is **progressive**. By definition, ageing can not be turned back. Once it has happened, it is irreversible. If we could reverse ageing we would call it a disease or an error or a mistake. Thirdly ageing is **deleterious** to the overall well being of whatever it is that is getting older. If such progressive changes are helpful and improve functionality we call it "Growing up" or "Maturation". Finally Ageing **increases the chance of failure**. If we use Edward Gibbon's example, the Roman Empire aged and was unable to respond to the challenges of the Goths and

Visigoths who brought about the fall of the once impregnable city. Likewise our bodies become increasingly less able to respond to the various physiological and pathological stressors that threaten us (in the technical jargon we can not maintain homeostasis) and we die. So Ageing is Universal, Progressive, Deleterious and increases the chance of system failure.

So what causes Ageing? Usually, we talk about the combination of intrinsic and extrinsic factors. The intrinsic factors are things such as our genetic make up – about 20-30% of our lifespan is said to be determined genetically, so choose your parents carefully. It is very clear that some of our cell lines have a built in self-destructive programme so that when a certain point is reached those cells die – so called Apoptosis. 20 years ago when I became interested in ageing, there was much talk about the concept that there was a limited number of cell divisions that any cell can make – the Hayflick number. That concept has become less popular as we have managed to identify, either from cancerous cell lines or from very immature stem cell populations, cells that appear to be eternal and lack the built-in senescence of most of our somatic cells. Intrinsically there are also changes that are brought about by hormonal and other factors. The extrinsic factors include those influences from our environment that harm us. These include things such as radiation, free radicals, wear and tear, trauma etc. Our ability to biologically and functionally withstand such extrinsic factors and repair such damage seems to decline as we become older. As our dividing somatic cells age, the left over bits at the end of the chromosomes shorten. The length of those telomeres is a good predictor of our life expectancy and our ability to survive things like heart attacks. What is very clear is that our rate of ageing and the way each of our bodies express increased senescence is very variable and is due to the complex interplay of all these factors and many more.

One the much discussed ageing changes is the menopause, essentially brought about the ovaries running out of eggs. The pituitary gland, the great hormonal control box in the brain, continues to try to stimulate the ovaries with high concentrations of stimulating factors, all to no avail and the oestrogens and ova dwindle away. I am told (but can not verify) that our species is the only mammalian species that experiences the menopause and there is a Darwinian explanation for this. I don’t want too get side tracked into a discussion of the relative merits of the random and

incredibly slow evolutionary mechanisms described by Darwin and subsequently perfected by others and the gloriously imaginative attempt to marry the biblical fundamentalism with the observed world in the concept of "intelligent design". However I am, in this context, a firm and loyal disciple of Darwin. (please do not think that I am atheistic for I that would not be true). The Darwinian imperative is to get our genes into the next generation and beyond. Our bodies are just vehicles by which our genes become eternal. All of our biology is to achieve the transmission of genetic material into our successors. Our gametes (our sperm and ova) are the only conduit to success. Once that is achieved our physical form is redundant – this is the Disposable Soma theory. Having perhaps surprised you with the apparent brutality of that, I need to intrigue you with the Menopause. The Darwinian explanation is that the physical cost to a woman of bearing children in late life is such that it is very unlikely that she would succeed in getting any such babies through the perils of childhood, which is very long in our species (all for other good Darwinian reasons). That woman's contribution to the care of her grandchildren who have only ¼ of granny's genes increases their chance of survival to more than double that chance compared with any of her own children bearing half of her genes that granny might have at that stage of her life. Hence the menopause is built-in ageing and is in a Darwinian sense beneficial. In addition, on a more prosaic level, most women find the cessation of periods a welcome relief from the chores associated with menstruation, the Menopause is therefore also beneficial in a much more practical way.

I will also use the menopause to illustrate a very important issue that bedevils discussion about ageing. That is, what is the difference between Healthy Ageing, accelerated ageing and disease? Clearly a woman who becomes menopausal as a result of chemotherapy for some horrible cancer aged 25 has a disease and she deserves a Medical Model response. But what of a childless woman who wishes to conceive who is menopausal at 45 years or 50. Is this a disease? What about a vastly fecund lady with 8 kids who re-marries aged 60? What is the appropriate response? Exactly the same issues arise in most aspect of ageing. When is greying of the hair a disease? What about wrinkles etc etc? What of hearing loos, blurring of close vision and stiffening of the hips? All of these can be attributed to healthy ageing but all are amenable to correction with various prosthetics some of which can be absolutely life transforming. No longer do we see bedbound elderly who are mentally active and in

all other respects healthy apart of their osteoarthitc hips. 50 years ago, such individuals would be wracked by pain, unable to walk or stand or even sleep. They were condemned to drug induced constipation with frequent faecal soiling, confusion, loss of dignity and pressure sores. Such individuals are now transformed by the replacement of their hip joints and can continue to be active and contributing and happy members of the community. The answers to this issue about what is healthy and what is a disease will continue to vary depending on your personal philosophy and the technologies available to you.. There is a current very sinister cultural change that is enveloping our liberal western world and is exploited by many Charlatans, Politicians, media outlets and even those bastions of probity, Doctors and Lawyers. It is the view that, if you can be persuaded that whatever has happening in your life leaves you feeling miserable, then you have a disease and you have the right to have whatever remedy will make you happy. Unfortunately, once the remedy is exacted, happiness does not inevitably ensue.

Enough of the biology of ageing: what about the demography? More and more of us are growing old. The life expectancy of a New Zealander at birth is 77.6 years for men and 82 for women. Many doom merchants, like the Director General of Health, lament this and talk of the "tsunami" of aged folk that will flood our community's ability to cope. That is appalling. What is extraordinary is that so many of us will see old age. The alternative to growing old is surely worse. The reduction in childhood mortality, the almost abolition of death in youth (with the exception of trauma and suicide) and the vastly improved mortality in middle age is a triumph. And the news is even better. The increase in life expectancy has been pretty constant at about 2 years for every decade in the 20 century. The improvement has been even greater in absolute and relative terms for the Maori. In practice, for the 30 minutes you spend listening to me, you get 6 minutes back in increased life expectancy – that can't be a bad deal. There is no evidence that this increase in life expectancy is slowing. 15 years ago I would have talked to you about the limits of life extension. I believed that there was a biological limit which more and more us would attain but none of us would exceed. That is probably not correct, indeed we currently believe that the extension of life expectancy can continue at the current pace provided we maintain our infrastructure. But many of you will now be wondering about the cost of all that increased life. What would be terrible would be to increase our lifespan at the cost of

increasing disability at the end of life. There would be an increase in the total amount of suffering – mankind's woe would be magnified for the sake of a few more years. Again, I come with good news. The data from westernised countries such as ours are clear. The disability free life expectancy is increasing at least as fast, and sometimes faster, than the total life expectancy. In NZ Healthy life expectancy is 69.2 years for men and 72.2 for women. What this means is that not only are we living longer, we have a reduced amount of disability and suffering and woe at the end of life. But what of the financial cost of all this ageing? Does it not mean that our hospitals will be overwhelmed with more and more old people? The commonest age of admission to General Medicine in Auckland City Hospital is 83. Again those who are dissatisfied and disheartened will claim that this is a terrible indictment of the epidemic of ageing on our community. They are plain wrong. Those older people spend only a few days in hospital and then usually return to their homes. The costs of health care for the last year of life for 90 year olds are less than for 80 your olds, who in turn cost less than 70 year olds etc. When I first saw these data, I immediately thought that this was a demonstration of ageism at work. I was wrong. There is a good biological explanation for this. The very old are less able to withstand whatever illness strikes them and so they die quicker than the more robust youngster who therefore consumes more health care resource. So what I am saying is that we have achieved a truly remarkable situation, where we are growing older and healthier and there is no increased cost in human suffering and no excess financial burden.

I wonder what you consider Mankind's greatest achievement to be. Perhaps the Taj Mahal. Perhaps landing on the Moon. What about nuclear fission? I would nominate Allegri's Miserere which I feel is the most perfect piece of music ever written. It was is so beautiful that the Pope claimed it for his own and forbad anyone from performing it outside the Sistine Chapel and no one beyond the Vatican was allowed to have a copy of the music. That lasted until the young Mozart, aged 14 turned up with his father on one of his money raising precocious European tours. Young Wolfgang heard the piece once and wrote down the music note for note without an error. I would argue that despite those man-made wonders, the normalisation of ageing is Mankind's greatest achievement and it should be celebrated.

Let me move on now to the Sociology of ageing. Here I have real concerns that all is not well in New Zealand. There are increasing numbers of able-bodied elderly people who are contributing to the community in all sorts of ways, often as caregivers for parents, spouses, children and grandchildren. The vast majority are financially secure and are, from a purely commercial view-point, a large and relatively un-tapped market. Yet despite this, the elderly are portrayed as being past it, being unhappy, being a burden. Look at our Television News presenters. The average age of news readers may be 35. Any older presenter is either retired or, like the not very venerable Mark Sainsbury, moved into some current affairs programme which has a decidedly elderly viewer demographic. Look at advertising – even if we get past the appallingly matronising "I don't just want healthy skin for a day. I want it for life" such models/actors are young and conform to the young persons' ideas of beauty. Let me take you to the zenith of ageist exploitative advertising – "Beautiful You". Here is a glossy infomercial magazine with pictures of beautiful women (and a few men). Meet Jaquie Withrington "35-45ish" She was "spotted one night whilst in an inner city Auckland bar having a few champagnes after a long days work". She is photographed for the "before" picture. The light is too bright, the contrast too soft, she has tatty hair, a simple understated necklace and a rather frightened expression. "You can follow the special treatments she had to enhance her appearance and increase her self esteem". You can then admire the "after" photograph of Jaquie with a plush pink hue, tidy hair, a massive confident necklace and an expression dripping self assured sincerity. I don't need to insult this audience by pointing out the marketing effort that has gone in to this and unstated message about how to achieve a champagne lifestyle. Turn the pages past "Spa trek the organic spa", liposculpture and " 'Fermalyft' the nonsurgical choice for naturally uplifting results" (most women would just wear a better bra) and soon you come to "U the latest way to stay young". This starts with the comment "We have seen the editorials……that vitamins do nothing – this is simply incorrect. As we are not getting our main nutrients from food we need to take supplements…….But how do we know what we need to take? Dr Mark Issard and Dr Charles Tweed….have spent a lot of time developing a product that is having very successful results. U, a comprehensive new programme for (you've guessed it) you". This sort of advertising is clearly playing on the fears of many of our friends and colleagues about getting old. But please note the editorials are absolutely correct. The anti-oxidant story is a myth.

Let be just divert a bit and talk about knowledge in Medicine. I am intrigued by the processes by which we doctors determine the truth. I don't want to give you a talk about medical epistemology or compare and contrast our medical approach with that of the legal profession although that is truly fascinating, but the current orthodoxy is that "evidence based medicine" is the arbiter of truth and should determine how doctors treat their patients. I remain, however, a very strong critic of EBM.

Whatever the rights and wrongs of EBM, the Pontiff, the apparently infallible source of the Truth is called the Cochrane library. This is a repository of all that is known about the effectiveness of all sorts of diagnostic and therapeutic interventions. The Cochrane Collaboration published on 16th April this year an overview of antioxidants. They looked at all the randomised studies using this class of drugs and the effect of those drugs on Death. Death is a good end point, it is not usually subject to differing interpretations or bias. The Authors of this review found 67 randomised controlled trials (the highest ranking methodology in the EBM lexicon) which included 232,550 patients. I am not going into the details but the death rate for those given antioxidants was 13.1% and for those given placebo was 10.5%. The authors state "beta-carotene, Vitamin A and Vitamin E significantly increased death rate". The evidence for Vitamin C and selenium was "not conclusive". Here is very powerful evidence that such treatments are, at best, useless or, at worst, really harmful.

Let us then go back to Drs Izzard and Tweed and "U the latest way to stay young". What they are claiming is not only unattainable it is not even desirable. They even go as far as to say that the "editorials" presumably referring to the Cochrane report we have discussed are "simply incorrect" without any justification. Indeed the only authority they quote for such a claim is their medical qualifications that are outlined at the bottom of the article. You may feel that much of this is harmless and it satisfies a need. I don't accept that. The customers for such outfits are often vulnerable. They have real problems with self esteem and they think such treatments will help. They believe they can purchase improved happiness by exposing themselves to real dangers. Now while I am sure that such misleading advertising does not contravene the law, it is hardly morally neutral. I also believe that the standards of behaviour of

all doctors acting in their professional capacity should be much greater than the legal minimum.

I have concentrated on the anti-oxidants because I wanted to bring to your attention the new evidence. I could have chosen the great hormonal-replacement debate. While no-one would deny that HRT in perimenopausal women is a good reliever of the menopausal symptoms – flushes, mood swings etc, we now have overwhelming evidence that such treatment, if continued long term increases the risk of blood clots and some cancers (especially Breast Cancer) and such long term treatment is almost certainly contraindicated in the vast majority of women. Some of those who really believe in the benefits of hormone replacement but don't want to use "pharmaceutical" preparations have turned to "natural" oestrogens from plants – Phyto-oestrogens however, I suspect that exactly the same risk-benefit equation applies. For any given benefit there is a fixed risk. Just because the hormone comes from plants does not make them any safer. What about other anti-ageing hormones? Growth Hormone, Dihydroepiandrosterone (DHEA) and Testosterone in Men (often marketed along with the phrase "andropause" to give some pseudoscientific gravitas to the condition) have been suggested as an anti-ageing hormones as well as many others. There is good evidence that not one of these hormones is effective in anti-ageing. I would refer those interested to an editorial in *The New England Journal of Medicine* October 2006. Their final comments are "The search for eternal youth will continue, but the reversal of age-related decreases in the secretion of DHEA and Testosterone…… should not be attempted".

Now I have given a pretty critical appraisal of the anti-ageing industry and tried to point out that this is misguided in a biological, social and philosophical sense. But I need to be very clear that conventional modern medicine has also fallen into the practice of Herd Medicine in an attempt to postpone death. This is an inevitable consequence of Evidence Biased Medicine. In New Zealand our National guidelines for cholesterol lowering and primary prevention of heart disease, recommend that 13% of the adult population take these drugs. What they do not say is that if these guidelines were to be followed, 108 healthy people would have to take these drugs for 5 years to prevent one death. 11% of all of those people would have significant side effects. I can not believe that anyone hearing those figures would think this is a good

deal. Our profession has been seduced by disease mongering and has been deceived into thinking that we must treat the cholesterol levels of our patients with truly extraordinary efficiousness. Most of my patients, I am sure, would hope that that they were one of the 107 who would either die despite the drug or continue to live drug-free without the side effects.

I just want to touch on another important topic that is regularly raised in the media: that of sexuality and ageing. For the gullible or the hopeful, there is the expectation that as we reach middle or old age we can still expect to enjoy cast iron erections that go on for ages and a refractory period that is only a few minutes (that is the time between loss of erection after ejaculation and the ability to have a further erection). For women the ability to enjoy squealing multiple orgasms is portrayed as a right even when we are old. This is fantasy. While Viagra and its look-alikes are very useful for some, we should not be selling the image of unbridled sexual performance to the aged as it will inevitably lead to disappointment and distress. Sex as we get older should be come more beautiful, less urgent and much less anxiogneic. The gentle, subtle, respectful intimacy of elderly lovers who do not suffer from performance anxiety or the worries about pregnancy or being compared with previous lovers etc is something we should cherish and admire. A study published just a month ago of sexual behaviour in successive cohorts of 70 year olds over the last three decades has clearly shown increasing amount of sexual activity and increasing satisfaction with their sex lives. 2/3rds of 70 year old men are sexually active and 1/3rd of women. Most of the difference between genders can be attributed to loss of partners which is, of course more common for women. Alex Comort who has studied sexual behaviour in the Elderly is quoted at saying “in my experience, older people stop having sex for the same reasons that they stop riding a bicycle: General Infirmity, It looks ridiculous, Never much enjoyed it anyway and No Bicycle”.

I am not going to talk about the anatomy or physiology of dying. It does not go down well at this stage of the evening but I do just want to encourage you to think about how you want to die. I would like to wake up dead one morning next to my loving wife. Such a sudden death is very likely to be due to a heart attack. I know that is rather selfish. If she predeceases me in like manner, I will be happy for her. What I dread more than anything is the gradual, inexorable erasure of my person, my self

control and my dignity that accompanies dementia. How do I increase my chance of a decent death? It is not to take cholesterol lowering drugs. Actually it is to promote, or at least not prevent, a heart attack. One of the really distressing aspects to the current death-postponing paradigm in which we practice is the large numbers of dementing elderly and others with late stage degenerative disease who continue to be prescribed drugs designed to prevent a heart attack and prolong their lives. What I ask of you all, is to consider your options in this regard and, if you feel that such drugs may not be consistent with your personal wishes, please discuss it with your loved ones, that they may represent your wishes when the time for such decisions needs to be made. I hope that, as we move forward with our care of the sick elderly, such wishes will become increasingly respected.

There are, of course, lots of really whacky ideas about how to extend our lives. My two favourites are concept of the “actuarial escape velocity” which posits that technological advances will one day be happening so fast that they will out-strip the ageing process and we will become immortal. Anther fun idea is that of Mind Uploading where we become so good at Information technology that we can have a computer that reads our minds. As our very being is what is in our minds and those minds have been uploaded, when our body decomposes we will become, in a virtual sense, immortal. I am sure that many of you can see problems with this even if it was technologically possible. What would happen if my two minds met? Would I like me? Would I want to be uploaded? What would happen if I changed my mind? All fun ideas but not things that we should be worried about now.

So to conclude my talk. I am now 51 years old. I am greying. I am balding. My hearing is really not very good. I can still see well enough to thread the eye of a trout fly with nylon without the use of spectacles. My tennis abilities are not as great as they were and I am sure my sexual performance has diminished. My remaining actuarial life expectancy is 27.01 years at my next birthday. I need hearing aids but they improve my quality of life. I am content with my lot. Indeed I am more than content. I am very fortunate. I hope that we can all celebrate our good fortune when we look, not at our disabilities and blemishes, but at our well-being and marvel that it has come to this. There are so many things that can go wrong with us, it is a wonder that any of us are healthy. We are vastly better off than our grandparents could

possibly have imagined and there is every expectation that our grandchildren will be similarly advantaged over us. Not only is the Cup of Life emptying more slowly than in years gone by, the Cup itself is bigger. Embrace ageing with all the vigour that you can muster. Keep physically and mentally active. Don't smoke. Be positive for there is evidence that such a state of mind not only improves your sense of well being but increases your life span.

So what about the birthdays being good for your health? The more you have the longer you live.

Thank you