

Is a Cure Really Possible?

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"everybody wants the cure, every member with sci wants to run, walk, jump, b/b, feel all body, can move arms and hands, recover sexual function, throw ventilator trough the window, etc... but first we must ask ourself if this things are possible.

how will do the science to restore muscular mass, bone density, tendons, functional in limbs, and other problems of many years post sci people? is really possible?"

Is a cure really possible? This question has been on the minds of many carecure members, particularly since a group of carecure advocates are heading down to Washington on April 12 to ask for more spinal cord injury clinical trial and research funding from the government. While I have tried to answer this question many times, a significant proportion of people (20% or more, judging from various polls posted on the site) donXt believe that a "cure" will occur in our lifetime. Instead of trying to answer from the perspective of a scientist who is viewing research results, let me try to address the doubts and reasons for pessimism expressed by many.

Reasons for pessimism concerning a cure for spinal cord injury fall into four categories. The first is that it is not possible to revive what has been dead and absent for many years, including neurons, muscles, bone, and other organs, especially with aging. The second is that the spinal cord cannot regenerate, i.e. reconnect. Scientists have never been able to do so in humans and why should we believe that they can do so now? The third is that even if a cure were possible, the government and society will not invest sufficiently into making the cure a reality for people. The fourth is that many clinicians think that a cure is impossible, at least in our lifetime. Let me consider each of these reasons in turn.

- How is it possible to revive what has been dead and gone for year? First, there is a false assumption in this question, the assumption that everything is dead and gone. Even the most severely injured people have most of their spinal cord below the injury site remaining and still have some bone and muscle. Second, it is possible to revive and regrow muscle, bone, and even neurons. Third, it is not necessary to regrow and revive everything in order to have significant function. Of course, the more you keep your body and lower spinal cord alive and kicking, the less work and time it will take. Yes, recovery will be slower in older people and will require work. However, for people who have been injured, even for decades, exercise will restore muscles, bones, and other organs. There will probably be ways to hasten that restoration in the future, perhaps through use of stem cells to juvenate those tissues.

- Can the human spinal cord regenerate? There is ample evidence that animal spinal cords can regenerate. Not all the data comes from animals. Let me just give three examples that argue for the possibility of human regeneration. First, if you stick a peripheral nerve into the spinal cord of a human, spinal axons will enter into the peripheral nerve and grow all the way

to innervate muscle. In other words, human axons will grow all the way given the right environment. A second example is the continued recovery of function in people many years after injury. Christopher Reeve's recovery of sensation starting 2 years after his injury, the return of his left index finger movement at 5 years, and his ability to move his legs in the swimming pool are well-publicized examples. I am sure that many people have similar stories of patches of sensation or movement returning many years after injury. A third example is the remarkable recovery of many people who have had severe incomplete spinal cord injury. That recovery often takes many years, similar to the timing that would be expected of regeneration. It is true that people with "complete" spinal cord injury will need therapies that will make them "incomplete" but that is why we need research and clinical trials.

- Government and society have not invested in research. It is indeed true and frustrating that our government and society have not invested adequately into spinal cord injury research and clinical trials. It has become very clear that they will not do so without significant public pressure. We cannot sit around and wait. It is not a matter of money but a matter of priority. Our government spends more on in one day in Iraq than they have spent on spinal cord injury research for the past 5 years. Our nation has placed its priority on other issues. This is something that can and must be changed. We also must make sure that when the cure comes, it is available to everybody and not just the wealthy and well-connected.

- Clinicians are pessimistic. It is true that many clinicians are pessimistic. However, there are also many optimistic clinicians, particularly ones who have taken the time and effort to learn about research and the new findings. We must remember that most clinicians trained decades ago when there was no hope and that it is difficult to see through the veil of tears surrounding spinal cord injury. Pessimism of clinicians is something that the spinal cord injury community can correct. After all, who knows more about the cure than members of CareCure? Who sees clinicians who take of spinal cord injury? Who else can change them?

Christopher Reeve once said to me that hope is the first step. Without hope, we have nothing. He said that if scientists had told him that a cure is not possible because of insurmountable scientific obstacles, he could accept it. However, if the obstacles to a cure are pessimism, politics, and money, he cannot tolerate it. These are things that can be changed.

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