

# 'Putting people in to hibernation' to cure cancers unsupported by evidence

February 22 2017, by Justine Alford, Cancer Research Uk

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Could putting patients in hibernation really help treat cancer? Credit: Cancer Research UK

If you've been browsing the news today chances are that researchers speculating about a surprise potential cure for cancer will have caught your attention.

This triggered some excitable headlines. "Put patients in hibernation to

destroy [cancer](#)", says the [Daily Mail](#). "Doctors hope cancer could be cured in just ten years by putting patients into 'hibernation' for a week", reports [The Sun](#).

So what's the scientific basis of these claims? Could we really make people 'hibernate' as a way to treat or even cure cancer? The short answer is no, not yet.

Here's the science behind these headlines and what the future may hold for research into this quirky idea.

## **Where did the story come from?**

This story is based on a [new scientific publication](#) in the journal *Life Sciences in Space Research*, which focuses on how astronauts might one day be put into 'hibernation' as part of space travel.

And Professor Marco Durante, from the National Institute of Nuclear Physics in Italy, presented the paper's conclusions at the 2017 AAAS meeting in Boston in the US.

But there's a catch.

The paper isn't actually a collection of new research findings. Rather, this is a summary of work carried out in this field so far, which has led to scientists speculating on the potential implications of the work for [cancer patients](#).

## **What's the idea?**

When an animal hibernates, normally to help them cope with a cold winter and lack of food, processes in the body slow down to save energy.

These processes that a cell uses to make energy from food – called metabolism – virtually grind to a halt so that the animal doesn't use up its precious resources. Based on this, the proposed idea that has hit the headlines is that because [cancer cells](#) grow rapidly, putting cancer patients into 'hibernation' could potentially slow down the growth of their tumour.

On top of this, there is [some evidence](#) that hibernation helps cells in animals become more resistant to stress, including [radiation](#). That's why the Italian team thinks that putting humans into hibernation could be useful for future trips deep into space, as it could help astronauts stave off the effects of cosmic radiation.

This also forms the loose basis for why the scientists think that hibernation could be helpful for cancer patients.

Many people have radiotherapy as a treatment for their cancer, which also inadvertently damages healthy tissue, causing side effects. This limits the amount of radiation that can be used for treatment. So the Italian team speculates that some of this accidental damage could be avoided if humans could be made to 'hibernate'. They say that because healthy cells might be made more resistant to the effects of radiation during hibernation, larger doses of radiotherapy could possibly be used that might be more effective at killing the cancer cells.

But this is pure speculation.

## **Does the science back it up?**

This idea actually goes all the way back to at least the 1950s, when scientists [showed](#) that hibernation could slow the growth of human tumours in hamsters. And a number of studies in animals, [mostly squirrels](#), have suggested that hibernation might help them stave off the

effects of radiation.

But at the moment it's not clear precisely why this is. It could be that cells in hibernating animals are better at fixing the damage that radiation causes to their DNA. Or perhaps it's to do with a reduced availability of oxygen. Blood flow slows down during hibernation, restricting the amount of oxygen that tissues get. And oxygen is needed for radiotherapy to kill cells, creating a reaction that inflicts fatal damage on the cell's DNA. So it's clear more research is needed to unpick these reasons behind these observations.

## **Are the claims evidence-based?**

There seems to be some science to support the idea that tumours may grow more slowly during hibernation in animals. And that cells might be more resistant to radiation in a hibernating animal.

But the claims that hit the headlines sadly go further than this.

The word 'cure' shouldn't be thrown around lightly in relation to cancer, as appears to be the case based on this excerpt from the scientific paper.

not be acceptable in normal conditions, because the organ dose would be exceeded. At arousal, the patient will be cured. This is obviously a speculative hypothesis, and yet so attractive that we believe it deserves experimental verification.

But this statement makes it clear that the potential this approach may hold is purely speculative.

At the moment there is no evidence to back up the claim that hibernation could help cure cancer. In fact there isn't any evidence to show that people can be made to 'hibernate'.

And because of this, it's far too early to say whether such an approach could help people with cancer. And since animals and humans are very different, we just don't know yet whether the findings from animals can be turned in to a possible treatment for cancer.

## **How close are we to hibernating people?**

Another [bold claim](#) made by the researchers is that, while it can't yet be done, hibernation in people could be achieved within 10 years. This was also [misinterpreted](#) as a 'cure' for cancer being a decade away, which isn't what the researchers were claiming.

There isn't any evidence to support that statement. And talk of a single cure for cancer is misleading in itself, as there are hundreds of types of cancer, each with their own unique challenges when it comes to research and treatment.

Humans don't naturally hibernate, and so far the only non-hibernating animal that researchers have successfully made to hibernate is [the rat](#). They did this by using drugs to switch off a particular set of signals in the brain. Humans are much larger and more complex than rats, so it's unknown if that technique would work in people, or more importantly whether it would be safe.

## **So what's the take-home message?**

The fact that an idea from space science could potentially lead to new ways to treat cancer is exciting. And at the very least, this paper backs up why research that spans different scientific disciplines is so important for progress and new ideas. But it's misleading to suggest that [hibernation](#) could 'cure cancer in 10 years' – there just isn't any evidence right now that such a feat is possible.

As our chief clinician, Professor Peter Johnson, said, it's not known whether or not such a technique could "help or hinder" treatments, something that requires further research.

So if scientists can find a way to make people 'hibernate', this might be an idea worth pursuing.

But not before.

Provided by Cancer Research UK

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