

India on frontline of fight against tuberculosis

All the symptoms were there but it still took four doctors and several months of waiting before Bharti Kapar's cough and stomach pains were diagnosed as tuberculosis.

Hailing from a poor town outside the smog-choked capital of New Delhi, Bharti, 24, was one of the 2.7 million new cases of tuberculosis last year in India — home to more than a quarter of the world's cases of the deadly disease, AFP wrote.

After five months of rigorous medical treatment and taking several pills a day, she was declared cured in April but still has to force herself to venture out of the small home she shares with her mother, two brothers and a sister-in-law.

"Sometimes I feel that my breathing is difficult, it's not normal. I do not have any energy, I do not want to go out, I do not want to do anything," she said.

A major killer in the West until the mid-twentieth century, tuberculosis remains a menace in developing countries and killed 421,000 in India in 2017 according to the World Health Organization — more than AIDS and malaria combined.

The Global Fund will meet in France on 9-10 October hoping to raise \$14 billion for the worldwide fight against TB, malaria and AIDS.

For its part, the government of Narendra Modi, which came to power promising development



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for India's 1.3 billion people, has set an ambitious target of overcoming India's TB 'epidemic' — the world's largest — by 2025.

It has created new patient monitoring systems and recently enlisted artificial intelligence to help screen for the disease.

The government's call to arms 'is not just rhetoric', said Dr. Jamhoir Tonsing of the International Union Against Tuberculosis and Lung Disease, noting that the budget for TB in India has doubled between 2016 and 2018.

But its timetable may be too

ambitious.

TB incidence in India is currently declining by about two percent each year, Tonsing said.

"To reach the 2025 target, we need to make this decline at least 10 percent per year. A big jump has to happen."

Poor man's disease

Transmitted by droplets of saliva when a contaminated person speaks or coughs, TB spreads easily in India's crowded cities, where immune systems are often already weakened by air pollution or poor

sanitary conditions.

The bacterium mainly attacks the young and middle-aged men who make up much of the workforce, with the death or incapacitation of a breadwinner piling additional misery on families.

"TB continues to be predominantly a poor man's disease," said Shibu Vijayan, Global TB Technical Director at PATH, an NGO.

"In that sense, an investment there (in fighting it) will probably uplift the economy, uplift the poverty part of it, uplift the overall health of the

household."

In a modest neighbourhood criss-crossed by congested lanes south of New Delhi, TB patients come to take their daily medication in a tiny clinic run by the NGO Operation ASHA.

Some visitors wear masks or wrap scarves over their mouths to avoid contaminating others.

A digital tablet displays the names and phone numbers of those scheduled to come in that day to take their medication, in an effort to ensure patients' programs are scrupulously followed.

Poorly administered anti-TB drugs or treatments interrupted before their term are a major worry for health workers, and responsible for the spread of multidrug-resistant strains of the disease.

The WHO has noticed a form of TB resistant to traditional medicines that has a mortality rate of 50 percent — comparable to that of Ebola, highlighting the challenges that remain even after the progress made against TB in recent decades.

With an estimated 600,000 multidrug resistant TB cases worldwide — and 135,000 in India — "we created a monster," said Sandeep Ahuja, co-founder of Operation ASHA.

But, the renewed campaign in India is a cause for optimism.

"We have created the demon, let's go out and cap it," he said. "The numbers are still manageable. We have enough equipment in our arsenal."

Hospitals too often unsafe for Parkinson's patients, says charity

Many patients with Parkinson's disease say they are not always given their drugs on time when in hospital, leaving some unable to walk or talk, according to a charity.

Parkinson's UK said hospitals were too often unsafe for people with the disease, leaving them scared of ending up there, according to theguardian.com.

Almost two in three people with Parkinson's do not always get their medication on time while receiving inpatient care, according to the charity's research.

Of the 700 patients questioned between May and July this year, 78 percent said their health had suffered as a result of poor medication management in hospital. Setbacks included tremors, anxiety and losing the ability to walk or talk.

Lloyd Tingley, the charity's senior policy and campaigns adviser, said: "Our new report highlights the devastating consequences of when people with Parkinson's don't get their medication on time in hospital, resulting in people leaving in a worse state than when they went in."

"It's clear that hospitals aren't always the safest places for people with Parkinson's, with many sharing with us that they're terrified of ever having to be admitted."

The charity claimed too many hospital



PETER BYRNE/PA

staff did not properly understand Parkinson's, a serious and incurable neurological condition that it is estimated 145,000 Britons may have. It has launched a campaign, Get It On Time, to ensure reliable access to drugs in hospital.

Mistakes in managing Parkinson's patients' drug needs can contribute to them staying in hospital longer than necessary. NHS figures cited by Parkinson's UK suggest patients spent 28,860 nights a year in hospital as a result, at a cost of £10 million.

Freedom of information requests by

the charity found that staff at less than half of hospitals had undergone mandatory training in how to care for and manage Parkinson's patients.

The Patients Association said the intense and growing pressures on hospitals could be to blame. Rachel Power, its chief executive, said: "People with Parkinson's have always encountered difficulties in hospital, with non-specialist staff simply not understanding how important it is for them to get their medication strictly on time. The ongoing crisis conditions in our hospitals are almost

certainly making this problem substantially worse."

Carole Buckingham, a Parkinson's patient from Cheshire, told the charity she felt hospital staff ignored her pleas about her drugs. "I have to take 36 tablets a day at five different times. But whilst I was in hospital I was never given my medication at the time I needed it, even though I was always asking staff and explaining to them how urgent it was," she said.

"It was like banging my head against a brick wall. I felt ignored and like the staff didn't understand Parkinson's and the severity of the situation. Because of this my Parkinson's symptoms got so much worse. One time I was given the wrong drugs but felt I had no choice but to take them because it was the only thing on offer to me. I ended up passing out. I could still hear everything going on around me and alarms going off and the staff rushing around trying to help me, but I couldn't move or talk. It was terrifying."

An NHS England spokesperson said: "Patients with Parkinson's and other neurological conditions are among the most vulnerable in our society and all parts of the NHS strive to provide them with the best care possible. This summer we published guidance, in partnership with charities such as Parkinson's UK, to help local NHS staff take practical steps to improve the care for these patients in our hospitals."

Aussie scientists develop new compound to prevent cells from dying

Scientists at Australia's Walter and Eliza Hall Institute of Medical Research developed a new compound that could be a game-changer for medical emergencies and surgeries.

Able to keep cells alive and functioning that would normally die as a result of the natural process called apoptosis, the new drug referred to as 'cell death blocker' has the potential to

minimize cellular damage after heart attacks and could also help to preserve organs longer for transplant patients, Xinhua reported.

Created after an 11-year research collaboration involving government funding and various other health organizations, study lead Professor David Huang said the discovery could be invaluable for the future of medical

care.

"Acute injury can cause cells to die rapidly leading to the loss and weakening of tissues and muscles," he said on Tuesday.

"In such circumstances, being able to prevent uncontrolled cell death could improve a patient's recovery, or even their chances of survival."

Now with the ability to intervene in

the earliest stages of apoptosis before irreversible damage occurs, Huang added that the next phases of research on the compound will involve "applying the knowledge we have gained to more advanced models of disease."

"There could be applications for keeping cells alive to prevent degenerative diseases," he said.

Effectiveness of electrical stimulation in producing spinal fusion

Researchers from The Johns Hopkins University School of Medicine performed a systematic review and meta-analysis of published data on the effect of electrical stimulation therapies on spinal fusion. They found significant improvement overall in the rates of bone fusion following a course of electrical stimulation in both preclinical (animal) and clinical (human) studies.

Detailed findings of this study can be found in a new article, "The effect of electrical stimulation therapies on spinal fusion: A cross-disciplinary systematic review and meta-analysis of the preclinical and clinical data," by Ethan Cottrill and colleagues, published in the Journal of Neurosurgery: Spine, medicalxpress.com wrote.

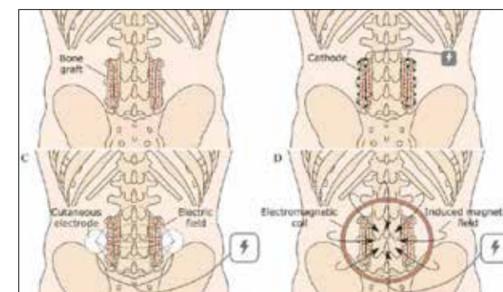
Background: Each year in the United States approximately 400,000 persons undergo spinal fusion surgery for spinal instability, pain, and/or loss of function. For some of these people, surgery alone does not produce complete spinal fusion. In those cases, adjuvant therapies must be instituted to aid in the process of bone healing.

One of these therapies is electrical stimulation. There are three types of electrical stimulation therapy in use today: Direct current stimulation, capacitive coupling stimulation, and inductive coupling stimulation (also known as pulsed electromagnetic field).

Direct current stimulation requires implantation of a stimulation device, which is usually done at the time of spinal fusion surgery. The device is small and is placed under the skin on the patient's back. Via electrodes, the device delivers a small direct current of electricity to the area where fusion needs to occur. The battery powering the device is good for 6 to 12 months; after that time, it can be removed or remain in place as the patient or physician deems appropriate.

Capacitive and inductive coupling stimulation therapies are noninvasive. With capacitive coupling stimulation, two small electrode pads are placed on the skin over the region of desired bone fusion. These pads produce an electrical field surrounding that region when powered by an external alternating current generator. This device is worn by the patient for 6 to 9 months and operates approximately 24 hours per day. Inductive coupling stimulation involves the use of electromagnetic coils placed on the skin over the site of anticipated bone fusion. Alternating current produces an electromagnetic field to induce bone fusion. This device need only be used for 30 minutes to 2 hours per day until fusion is confirmed.

Each therapy has a particular mechanism of action and carries advantages and disadvantages. These are all described and compared in the paper by Cottrill and colleagues.



ETHAN COTTRILL

Present Study: Application of direct or alternating electrical current has been shown to induce and speed up the process of bone healing following spine fusion surgery. Evidence for this has come from small studies. Cottrill and colleagues set out to pool the data from small studies on the effects of electrical stimulation therapies and to comprehensively assess these effects overall and in specific subgroups.

The authors performed a systematic review of all English-language articles describing the effects of electrical stimulation therapies on spinal bone fusion. Applying specific inclusion criteria, they narrowed the studies down to 17 preclinical and 16 clinical studies. Meta-analyses of data from all of the studies that included a control group were also performed (11 preclinical studies [257 animals] and 13 clinical studies [2,144 patients]).

The authors found, overall, that electrical stimulation was effective at augmenting spinal fusion. They found nearly a fivefold increase in the odds of successful bone fusion in animals and a greater than twofold increase in patients treated with electrical stimulation therapy.

With respect to the various types of stimulation therapy, the authors found that in animals the effects of direct current stimulation on spinal fusion were very beneficial, whereas the effects of inductive coupling stimulation were little different from no electrical stimulation at all. (No preclinical studies involved the use of capacitive coupling stimulation.)

In humans, both direct current stimulation and inductive coupling stimulation were highly effective in aiding spinal fusion. The authors were unable to find a difference in efficacy between these two types of electrical stimulation therapies. Only one study of capacitive coupling stimulation therapy in humans fit the inclusion criteria of the systematic review, and that paper showed no statistically significant difference between fusion rates in patients who received electrical stimulation and those who did not (control group).

In a subgroup analysis of clinical studies, the authors found that the number of spinal levels that were fused and whether instrumentation was used did not change the effectiveness of electrical stimulation devices. They also found that these devices improved the rates of fusion in patient groups prone to have difficulty in achieving total spinal fusion, such as patients with difficult-to-treat spines and smokers.