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Used needles are causing a health crisis in India

All over India, children scavenge in the filth for discarded syringes to sell back to hospitals and quacks. The needles, used again and again, kill at least 300,000 people a year

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In Okhla, New Delhi, there's a shack marked with a red cross. It is one of many tiny "clinics" in the lanes of a vast slum, manned by an untrained "doctor". A patient - an elderly man hunched on a rickety stool - is having an injection. He's been tired and coughing a lot, he says as he rolls down his sleeve. The quack, gloveless, adds the syringe to a grimy pile in a kidney dish. Some of the needles have been used so many times that crusts of flesh are stuck to them, and the black print measurements have worn off the plastic casings.

The slum is built in - and with the contents of - a rubbish dump. Children play in it, men urinate in it, goats and dogs scavenge in it, and sacred cattle graze on it. Probably 2,000 people live here, crammed together, sometimes 20 to a tiny hut. They are mainly illegal immigrants from Bangladesh.

In the doorway of one shack, a woman in a yellow sari is chopping fish. She cradles a baby in her lap, its face covered in flies. Flies are everywhere: they drink the black water trickling along the streets, they swarm in the dogs' eyes and on sticky food laid out in front of makeshift shops.

In these conditions, illness is rife. There are nearly 14m people living in Delhi, a third of whom inhabit slums just like this one. When people need medical care, they go to a local doctor for an injection. They would rather have a needle than a tablet - it is seen as a miracle cure, a panacea, and the pinch tells them it's good for them. But the syringe the doctor will use will probably have been used before, and may carry lethal infections such as hepatitis B or C, or HIV. When the needle is eventually discarded, it will be tossed into the rubbish outside with the other waste.

Children come to rummage in the mess, collecting the syringes like seashells from a beach. Their hands scratched and bleeding, the "rag pickers" rinse the syringes and sell them back to the doctors for 10 or so rupees a batch - about 14p. Sometimes the children use them as water pistols, or drink from them. Or they string the pump gaskets together to make jewellery. And when they get ill, their desperate parents take them to the doctor - for an injection.

In India, the average person has three to five medical injections per year. Around 62% of these will be delivered by unsterile or reused syringes. Worldwide, 1.3m people die each year from receiving unsafe medical injections. India has the worst problem: the World Health Organization (WHO) estimates that in India alone, 300,000 people die every year as a result of dirty syringes.

The problem is not confined to slums or rural villages. Private and government hospitals are also reusing syringes. Thousands of people are entering hospitals with minor ailments and leaving with life-threatening infections because practitioners won't spend money on new equipment, or simply don't know any better.

In fact, until the UK charity SafePoint launched a nationwide media campaign last November, the Indian people were largely unaware of this silent epidemic. The Indian government knew - it commissioned a study into the problem in 2005. The WHO knew - it put it on its recommendations list to address this year. Even giant medical product manufacturers were aware of it - their syringes are the ones being reused. So why did it take a small British charity, run from an East Sussex barn with the help of an anonymous donor, to make a real difference?

There are 50 billion syringes manufactured each year worldwide. They are the most commonly used medical product. Every syringe is "disposable", meaning that it should be used once and discarded safely in a "sharps" container for incineration, but, in truth, there is nothing to stop a syringe from being used any number of times. Why, though, would trained medical staff flagrantly disregard basic rules of infection control?

It's a complex picture, even for those who are confronted with it daily. Neela (not her real name), a 24-year-old nurse from Badshah Khan government hospital in Faridabad, Delhi, is racked with guilt. She explains how terrible she feels when she injects patients with dirty needles. It is her day off today, and she is at home with her family in a rural village outside the city. She's so ashamed, she says, because she knows she could be harming people - not helping or curing them, but potentially passing on life-threatening infections. It goes against everything she has been taught.

Why, then, does she do it? "We're told to. They tell us to use the syringes sometimes two times, three times, 10 times. I have seen them reused 30

or 40 times." She sighs, deeply troubled by the confession, and not just because of her own culpability. In India it is considered dishonourable to criticise the medical profession. Doctors are among society's most respected and important people. Furthermore, Neela is of marriageable age, and a nurse is quite a catch. Speaking out against her employer could cost her her job, disgrace her family and sabotage her chances of a good match.

Why does she think they reuse syringes as a matter of course? Is it money? When so many can't afford clothing and food, does even the cost of a new syringe - four rupees or so from a chemist, around two rupees each when bulk-bought from suppliers - seem unnecessary?

"It's for many reasons, not just one," she says. "They are accustomed like this - they have practised this way always, and they will continue. It may be they think if they reuse [syringes] they will save money. But it's also a way of mind. It's not just syringes: they will cut the cord of the baby, and reuse the instrument next time."

Neela regards this "way of mind" as the greatest obstacle to solving the problem. Did she ever argue with her employers about it, tell them their procedures were wrong or potentially dangerous?

"I didn't argue with them," she says, "because I knew there couldn't be an outcome. There is no point." There would be no point, either, she believes, in transferring to a different hospital. "I knew it would be happening there [too]. Many private hospitals reuse. I talk to a lot of my friends who work [in them]. I felt bad, I didn't know what to do."

She sounds horribly distressed. She is a clever girl and a dedicated nurse, facing the reality that the turning of a blind eye might be fatally ingrained in the system of her chosen profession, and possibly her culture. Suddenly, as if to underline that point, her father summons her, and, whispering apologies, she leaves.

There are, though, small signs of change. Last month, in the western town of Modasa, two doctors were arrested on homicide charges for giving injections with used syringes after 34 people died in an outbreak of hepatitis B. Six more were arrested for criminal negligence. The trail went as far back as the local pharmaceutical company at Gujarat, which allegedly bought an order of used syringes and needles to sell on. The matter is being investigated by the police. India is finally opening its eyes, and it is largely thanks to a campaign launched in November last year by SafePoint.

Marc Koska is the chairman of SafePoint, and founder of his company Star Syringe. He has been working towards a solution to injection reuse for the past 20 years, and sees the spread of infection by syringes as "surely the biggest man-made threat to health on the planet". In 1997 he patented a design for an auto-disable (AD) syringe called K1, which he began developing in the 1980s. Like so many brilliant ideas, it is fairly simple. The K1 has a locking ring in the syringe barrel, and when the plunger is fully depressed, it locks in place and cannot be re-plunged. Forcing the plunger out snaps the ring, and the syringe is useless. It is not the only design of its kind - there are a handful of others on the market. It's SafePoint, which Koska set up in 2005, that makes all the difference to his cause.

Star sells around 700m K1 syringes a year, but this represents only about 1.5% of the total market. Last year's SafePoint India campaign was the real triumph. With 14 press calls across the country, attended by 200 newspapers, nationwide radio broadcasts and short film screenings on television and in cinemas, it was one of the largest health campaigns ever staged. It cost 700,000 euros, reached some 500m people, and can take considerable credit for the recent injection-related arrests and police investigations, and for what, hopefully, is a wind of change. The campaign also caught the attention of the Indian minister for health and family welfare, Dr Anbumani Ramadoss. "I'd tried to meet with him four or five times over previous years, but it was never granted," says Koska. "When I met him, I asked if he knew who I was. He said no. I said, 'It doesn't matter if you don't know who I am. Indian journalists know who you are, and you'll have to do something about this now.'"

SafePoint promotes safe injections with AD syringes. It was set up 10 years after Star Syringe, and it is impossible to forget that SafePoint's work, directly or indirectly, lines the pockets of Star Syringe, which last year turned over £1.6m, with a profit of £320,000. "People can think what they like," says Koska. "The SafePoint message and the Star product are both about saving lives, but star has to make a profit."

Whatever the motivation, the campaign is working. Soon after the meeting with Koska, Ramadoss publicly announced the mandatory introduction of AD syringes to all urban government hospitals by April 30, with a promise to extend the legislation to the provinces in due course. Rural areas were granted extra time to prepare safe disposal systems for the extra biomedical waste.

The Indian government announced that "almost all central hospitals are already using AD syringes", but Koska's experience tells a different story. SafePoint has recently filmed three nurses at a government hospital, administering injections to multiple patients with the same syringe.

"The reality is, basic health care in India is high risk," says Koska. He is talking about false economies. "There's a difference of half a rupee between an AD and a normal syringe. The typical cost for one person in a hepatitis treatment

programme is between \$2,000 to \$12,000. Since a 2005 report by IndiaCLEN [the Indian Clinical Epidemiology Network], officials knew about the problem, but until the new legislation did little to address it."

Worldwide, immunisation accounts for just 5% of all injections, which means that the rest are curative or therapeutic, and the sale of syringes is controlled by large, rich medical-supplies companies.

K1 syringes are more expensive to produce than their standard equivalent - about 2.5p as opposed to 2p. But 13 years ago, when Star first started and the booming immunisation market was rich, AD syringes were twice the retail cost, because the new technology required special, expensive equipment. (The K1 design can be made on existing machines.) Buyers did not foresee any benefit in them. It took Marc Koska 17 years to get his first order. Now most immunisation programmes use AD syringes, but the huge market for therapeutic syringes has yet to take off.

I talk to a 43-year-old former WHO employee, who asks to be quoted anonymously because, after 20 years' experience in the immunisation and syringe-safety field, he is an important consultant to a number of health agencies and medical suppliers, and his livelihood depends on neutrality.

"With AD syringes, everyone's fighting over the 5% immunisation market," he says. "And they're nastier in their fighting, because they are fighting for a small chunk. For the biggest medical companies in the global market, syringes are loss leaders because they're used as tie-ups, so every type of medical consumable a buyer needs, he'd get from one company. The companies don't care about whether a syringe is AD or not - it's not even a drop in the ocean to them: they're making money on everything else."

I approach Becton Dickinson, the global market leader for syringes, standard and AD. The UK vice-president, John Hanson, says: "To suggest that, is totally incorrect. We produce everything at the best possible cost. We do our best to find out what the customer needs, and how we could really help to change practice and improve the whole healthcare side of life around the world."

"We are very focused on the developing as well as the developed market, so we look at our product line and the ways we can develop it. Obviously, like all PLCs, we expect there to be a profit as we continue to grow for the future. We certainly don't sit on profit from a particular product."

Back in the 1980s, Becton Dickinson helped to develop the first cost-effective AD immunisation technology in collaboration with a Seattle-based non-governmental organisation called Path. BD continues to work closely with Unicef and the WHO. It has several AD products of its own, and is licensee to an undisclosed number of other patented products, including Koska's K1, though it has done nothing with it commercially.

"BD have enough muscle to acquire any technology in the world," says Koska. "Of course BD's raison d'être is commercial. Why shouldn't it be? They have to make a profit like anyone else, but whether or not they thought K1 was a good product, why, when they profit and save lives from immunisation, have they not done more in the curative market?"

Renuka Gadde, the worldwide director of global immunisation and injection safety at BD, says the company is developing new AD technologies and waiting for a policy change under which to release them. "If the theory were true that if you have the right product, everybody buys it, K1 should have flooded the whole of India, because it was poised to do so, right?" she says. "It's a question of policy. We would like to work with the industry, with the ministry, with the WHO and with international agencies, to ensure that the right policies are in place, so that the alignment becomes conducive to our breed of clinical practice."

Last year, at the WHO's Safe Injection Global Network (Sign) meeting in Moscow, AD syringes for therapeutic injections made the bill of recommendations for the first time. The new policy will advise governments to legislate to use AD syringes for all injections. As yet, the recommendations have not even made it to the WHO website, let alone the implementation stage. The recommendation was originally drafted in 2005, so it seems BD may have a wait before they can launch their "exciting new technologies" on a fully AD market.

With big medical and pharmaceutical business, there are always conspiracy theories, but the real traps lie in the actual policy-making. Behind the cover of corporate-speak, admin delays and "initial market research" lies a very real danger: the help that is needed by the poorest few could be being delayed by those who can most afford to give it to them.

Is it ridiculous for us to assume that NGOs and health ministers would want to do the best for a country's health, aside from any mercenary or political double-dealing?

"Think of healthcare problems in a country like India," says the former WHO employee. "They're enormous. Therapeutic injection safety is low on a lot of countries' priority lists."

It isn't very sexy, doesn't raise money like immunisation, isn't measurable in terms of results, so it slips through the net. Plus, admin-wise, it comes under the general remit of infection control. In the WHO there's one person dealing with the entirety of infection control. She's buried with a million other issues, from hand-washing to MRSA. Pick the telephone up, you'll never get to her."

The one person is Selma Khamassi. She eventually returns my call the day before this feature goes to press. "We need a syringe design that incorporates not only single-use," she says, "but also anti-needlestick technology [to prevent hospital workers from pricking themselves]. As yet this technology is too expensive to recommend to poor and middle-income countries. Manufacturers could reduce product costs if demand increased, but that won't happen until policy is in place." It's Catch-22.

"One thing I can't understand is Neela's situation," says Koska of the young nurse at Badshah Khan hospital. "How can she go on giving injections, knowing she might be infecting patients? Killing them, basically. Is a life so cheap?"

For a moment I remember the woman in the yellow sari and her baby in the fly-infested slum, and it seems hopeless. But Marc Koska sees some room for optimism. It is his hope that the new recommendations will be a step towards AD representing 90% of the world's syringes. Standard reusable syringes are useful in a few medical procedures, so there is no benefit in discontinuing them completely. But imagine a world where transmission of HIV and hepatitis through needle-sharing is virtually eradicated, and even the ill-educated cannot unknowingly contract deadly diseases from the doctors in whom they place so much trust. Forty per cent of the 12 billion injections given worldwide each year are given with unsafe syringes - and that is just the measurable figure, for medical injections. AD syringes could save 300,000 lives in India. Worldwide, they could save many millions.

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