AUTODISABLE SYRINGES

Starting May this year, all central government hospitals will be required to use only auto disable (AD) syringes. What are auto disable syringes and what is the story behind it?

A study in 2005 by the Union Government of India and Indian Clinical Epidemiology Network found that 62% of injections were unsafe due to reuse of syringes. Additionally, there was an outbreak of Hepatitis B in Gujarat with 56 deaths in March 2009. Investigations unearthed a racket where tons of used syringes, needles, saline bottles, IV drips and vials were found in warehouses packaged for resale.

Autodisable syringes eliminate the risk of infection because they cannot be reused. According to manufacturing type, some syringes, like the SoloShot, have a fixed needle with a metal clip that locks the plunger after a single use. Other syringes, like the K1, have a safety plunger that breaks off after a single use and removable plastic tabs that indicate if the syringe has been used before.

AD syringes have either fixed or detachable needles. Detachable needles can only be used with the syringes with which they are provided, thus eliminating the re-use of needles. For all types of AD syringes, the plunger is permanently locked after being depressed. With some models, like the Univec, the plunger locks once depressed, but can be withdrawn a short distance to aspirate blood and check for needle position. Some AD syringes contain a single dose of pre-filled vaccine or medication, like the Uniject, to ensure increased accuracy in dosage.

It costs 10% more to make a conventional syringe into an AD syringe. The price in the market is Rs. 2 for a conventional syringe and Rs. 2.50 for an AD syringe. In government tenders, conventional 2 mL syringes sell for 90 p and AD syringes for Rs. 1.5. But the hidden cost of disease transmission associated with unsafe injection practices is considerably higher than the cost of preventing disease. Annually, unsafe injections cause an estimated 1.3 million early deaths worldwide, a loss of 26 million years of life, and a burden of US $535 million in direct medical costs. (*The Economic Times 28 April 2009*)

A NEW MICROSCOPE

Changhuei Yang at the California Institute of Technology in Pasadena has invented a new microscope which is incredibly small, cheap, and mass producible. It may not only transform research microscopy but also boost low cost science and medicine in developing countries. The principle of this microscope is different from the routine microscope. Just as floaters in our eye are registered by us when bright light casts a shadow of the debris on the retina; in the new microscope the sample to be studied casts a shadow directly on to an array of commercial light sensors as it floats along a microfluidic channel. The sensors feed the projection pattern to a computer, which constructs an image using relatively simple image-processing software.

The scope is rugged, works with sunlight, needs only the amount of computational power found in an iPod. It could revolutionize cutting edge work done in high tech labs as well greatly improve grassroot level health care delivery.Researchers could perform drug assays, genomic or proteomic screens and rapidly observe manipulations on the shape or behavior of living cells. On the other hand, Ana Rodriguez, a malaria researcher also at New York University, is now testing the microscope's ability to diagnose malaria-infected red blood cells based on their shape and those of the parasites inside them. This microscope may be a boon for a health worker who needs to travel from village to village (*www.nature.com 3rd June 2009*).

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