Inactivated polio vaccine (IPV) made in India launched

Although India was declared polio-free (wild type virus) on March 27, 2014, the battle against polio is still not over. Cases of polio have been detected in the neighbouring countries of Afghanistan and Pakistan and still pose a threat to India. OPV (Oral polio vaccine) which is a mix of live attenuated viruses (Type 1,2 and 3) has been the cornerstone of the “Pulse Polio” programme which was started as an initiative in Vellore by Dr. Jacob John in association with the Rotary Club (Read all about it in the January 2015 issue of CMI journal). However OPV has some disadvantages - it is not as safe and effective as the injectable IPV (Inactivated polio vaccine). IPV was however much more expensive and therefore was not a part of the routine immunisation programme. In a fresh effort, the Ministry of Health has launched an indigenously produced IPV (produced by Sanofi) that will form part of the regular immunisation programme. In a fresh effort, the Ministry of Health has launched an indigenously produced IPV (produced by Sanofi) that will form part of the regular immunisation programme. However, children will continue to receive OPV (Oral Polio Vaccine) dose under routine immunization and in pulse polio campaigns till they are 5 years of age. The plan is to include IPV along with OPV to confer double protection and then to slowly phase out OPV in the long run in a staged manner.

A new Ebola vaccine that is safe and effective

A clinical trial in the latest issue of Lancet infectious diseases has demonstrated a new vaccine against Ebola that is well tolerated and safe. The vaccine consists of a modified adenovirus (common cold virus) along with a single protein from the Ebola virus has been shown to elicit a strong immune response in adults. If found effective in further clinical trials, the vaccine can potentially be used to protect the family members and health care workers who work with Ebola affected individuals. The study was done among volunteers in Mali and the USA. There were no safety concerns with the vaccine and the study recommended further clinical trials before a possible large-scale manufacture.

A roundworm that helps with human fertility

While studying the phenomenon of a very high fertility rate among the Tsimane women of Bolivia, researchers Aaron Blackwell and his group found a surprising association – with parasitic infections. The average number of children the women of this tribe bear during their lifetime is 10 . While collecting data from nearly 1000 women, they found that chronic parasitic infections may play a role in fertility. Women with roundworm infections had an average of 12 children, on the other hand those with hookworm infections had a lower average of 7 children. Infection with roundworm was associated with earlier first births and shortened inter-birth intervals, but infection with the hookworm was associated with delayed first pregnancy and extended inter-birth intervals. The authors theorised that the effects "may relate to the balance of immune responses that the different worms induce." They suggested that the immune changes in a woman’s body may make it "more or less friendly towards a pregnancy." However they also caution that the results are very preliminary and only show an association that may not necessarily be causal. Their findings were published in: Helminth infection, fecundity, and age of first pregnancy in women. Aaron Blackwell et. al. Science 20 November 2015: 350 (6263), 970-972.
Almost 39% of children in India stunted - INDIA HEALTH REPORT: Nutrition 2015

The INDIA HEALTH REPORT: Nutrition 2015, a document prepared by the ‘Transform Nutrition’ group, an international consortium that seeks to understand the problem of malnutrition through research and provide solutions, was released on December 10th 2015 by the Union Health Minister, J. P. Nadda.

The report states that although India has made rapid improvement in household income and agricultural productivity, the problem of malnutrition is yet to be adequately tackled. Some of the important findings in the report are:

- **Malnutrition and its effects:** Malnutrition is still prevalent - 38.7% of children in India under the age of 5 are stunted and 15% are wasted. Only 50.5 percent infants of six to eight months receive solid, semi-solid and soft food.

- **Anemia:** 55.3% of women in the 15-49 year age group are anemic. Almost 70% of children in the 6-59 month age group suffer from anemia. Only 21.3 percent of children under three years of age have received supplementary food recommended by Integrated Child Development Services (ICDS) for 21 days, a month.

- **Immunization cover:** Full immunization coverage among children (12-23 months) is only 65.3%

- **Low birth weight:** 18.6% of children have low birth weight (<2.5Kg).

The statistics regarding malnutrition and anemia are staggering and of concern and shows that India has yet a long way to go in addressing the health needs of the vulnerable – especially women and children.

On the bright side the report has shown that between 1990 and 2014, the income of the average Indian rose by an average annual rate of 4.7 percent and child undernutrition rates have been declining, first at a slow rate between 1992 and 2006, and at an accelerated pace since 2006. However, in spite of this, India is still home to over 40 million stunted children and 17 million wasted children under five. *(Image from www.thehindu.com)*

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Hydrogel with snake venom derived hemostatic agent developed

Researchers at the Rice University, Texas, have discovered a new material that can help stop bleeding quickly and can be used for hemostasis in surgeries even if the patient is on heparin. A **nanofiber hydrogel infused with viper snake venom** has been found to stop surgical bleeding faster than the currently available materials like Gelfoam.

Uncontrolled perioperative bleeding can be disastrous especially in patients who are on heparin and control of bleeding can prevent haemorrhaging and death. The researchers described in their paper, a nanofibrous peptide hydrogel termed SLac which incorporates snake-venom derived Batroxobin that on its own can act as a physical barrier to blood loss. The product called SB50 enhances clotting even in the presence of heparin. They tested the SB50 on a lateral liver incision model of rats and found that the Batroxobin-loaded hydrogels rapidly (6 to 20 seconds) stopped bleeding in both normal and heparin-treated rats.

Batroxobin has been known for its coagulant properties since 1936 and has been used in various therapies. Dr. Hartgerink one of the authors of the study explained- “Heparin blocks the function of thrombin, an enzyme that begins a cascade of reactions that lead to the clotting of blood. Batroxobin is also an enzyme with similar function to thrombin, but its function is not blocked by heparin.”

Batroxobin is derived from the venom of two species of South American pit viper. It can be injected as a liquid which rapidly turns into a gel. The gel then conforms to the shape of the wound and stops bleeding within seconds and also keeps the wound closed. The research was published in *ACS Biomater. Sci. Eng.*, October 22, 2015.