

**MENSTRUAL CUPS**

Not many people know that menstrual cups are a fair alternative to options like sanitary pads and tampons. They are flexible silicone cups, which collect menstrual blood, instead of absorbing it like sanitary pads. They are reusable and last upto ten years. They are available in over 99 countries. In India, they cost between Rs 300 to Rs 700/- per piece. Thus they work out to be much cheaper than the single-use products like sanitary pads.

The Lancet recently published a systematic review and meta-analysis of its efficacy in reducing leakage, and safety. Of the 43 studies analyzed, only four had a direct comparison with disposable pads or tampons. Leakage was noted to be similar or lower in menstrual cups compared to other products. Overall about 70% of participants expressed a desire to continue to use it. Cases of vaginal injury, toxic shock syndrome or urinary tract complaints were present but rare. A study in Kenya, which detected lower bacterial vaginosis in users of a menstrual cup than in those who used sanitary pads, postulated that the inert material of the menstrual cup might assist in maintaining a healthy vaginal pH and microbiome.

An open discussion about menstrual hygiene and clear advice about all options are now under the purview of a pediatrician and good advice to the adolescent has cumulative benefits over the years. (*Lancet Public Health*. 2019;4:e376-93)

**PREDICTING RENAL FAILURE USING DEEP LEARNING**

In current clinical practice, making an accurate estimate of the glomerular filtration rate (GFR) using an ultrasound is fraught with the problems of subjectivity and poor sensitivity. Conventionally, nephrologists use kidney length, volume, cortical thickness and echogenicity to make a rough guess about the state of the kidney. Human eyes are not sensitive enough to pick-up subtle imaging changes to make an accurate assessment of the GFR merely on ultrasound images.

However, if innumerable ultrasound images of kidneys paired with the accurate GFR as assessed by serum creatinine are fed into a machine with deep learning capabilities, it can develop algorithms to accurately predict the GFR when a new image is fed into it. Besides just ultrasound images, if all other clinical data are also paired, the prediction improves. This process is called deep learning using big data and convolution neural networks.

Deep Mind is a health and artificial intelligence group acquired by Google almost five years ago. In their biggest breakthrough, they have now published a paper in *Nature* in which they analyzed electronic medical records of thousands of patients and created recurrent neural networks that operated sequentially over individual electronic health records, processing the data one step at a time and building an internal memory that kept track of relevant information seen up to that point. At each time point, the model would output a probability of acute kidney injury occurring at any stage of severity within the next 48 hours. Their algorithms could accurately predict renal injury which would culminate in needing dialysis 48 hours prior to any signs or symptoms in 90% of cases. Big data and deep learning are poised to transform the landscape of medicine and it may be sooner than we expect. (*Nature*. 2019;572:116)

**MONSOON ADVISORY FOR LEPTOSPIRA**

The Brihan Mumbai Municipal Corporation has issued an advisory and made preventive treatment for leptospirosis free of cost for all its citizens. The advice is valuable for all areas reeling under the onslaught of the monsoon.

Individuals with a single history of wading in flooded or contaminated water without any open wounds on the skin are categorized as low-risk. They are recommended to take a single dose of capsule doxycycline within 24-72 hours of exposure. Those who have waded once through contaminated water with open cuts or skin wounds are considered moderate-risk and must take doxycycline 200 mg once a day for 3 days. Pregnant women at low risk must use oral azithromycin 500 mg single dose, and those at moderate risk must take the same once-a-day for 3 days. Children below 8 years are recommended to use liquid formulation of azithromycin 200 mg single dose if low-risk, and for 3 days if moderate risk. People at high or recurrent risk must take weekly prophylaxis for 6 weeks. Treatment for adults is with doxycycline for 7 days and chloroquine. In children, it is recommended to treat them with oral amoxicillin 30-50 mg/kg/day for 7 days.

Leptospirosis is endemic in Gujarat, Maharashtra, Tamil Nadu, Karnataka and Andaman and Nicobar islands. Data from many other states suggests that it is an underestimated health problem, which must be considered as a diagnostic possibility in children presenting with fever, especially in the monsoons. (*First Post* 9 August 2019)

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