

FDA APPROVES KYMRIAH

In a landmark decision, the USFDA has approved a gene therapy in the United States. Tisagenlecleucel (marketed by Novartis as Kymriah) is a therapy for relapsed or refractory B cell leukemia in children. In this novel therapy, the T cells of the patient are removed and transported to the manufacturer's (Novartis) laboratory. Here genetic manipulation of the T cells is performed to induce the production of a surface antigen called CAR (chimeric antigen receptor) in the cells. This receptor recognizes cancerous B cells that bear the CD19 antigen, and destroys them. The therapy was approved after a phase II study with 63 patients documented a whopping 83% remission in 3 months.

A dreaded complication (with a black box warning) of the procedure is the cytokine release syndrome. It is managed with supportive care, steroids and a specific interleukin-6 blocker – tocilizumab. Tocilizumab has now received FDA approval for use in patients on Kymriah who develop this complication. Other adverse effects of CAR-T cells are B cell aplasia and cerebral edema. Genetically modified autologous T-cell immunotherapy marks a first step in an exciting area of therapeutics. It will be closely watched by many. (*The Lancet 9 September 2017*)

THE HUMAN DX PROJECT

This project is being touted as the medical equivalent of Wikipedia. It is an attempt to crowd source medical advice from experienced physicians around the world along with some tweaking by artificial intelligence. The basic premise is that diagnosis made purely by standalone physicians is fraught with significant errors. Artificial intelligence alone is also not yet the answer to accurate diagnosis. The Human Dx App can be used by physicians who do not have access to specialist's consultations by uploading anonymized patient data, including history and investigations. Physicians who have enrolled onto the project will provide free advice. All the various suggestions will be compiled using artificial intelligence and a single coherent answer will be attempted.

Ateev Mehrortra and Shantanu Nundy from Harvard Medical School published a study comparing the accuracy of the Human Dx to web-based symptom checkers and found that Human Dx clearly outperformed. Diagnosis by doctors was 84% accurate compared to 51% by Apps based on symptom-checking. It is conceived that the tool may also be used by physicians to hone their diagnostic skills. One prominent challenge involves getting enough physicians to

volunteer their time and free labor to meet the potential rise in demand for remote consultations. Another possible issue is how its quality control will address users who consistently deliver wildly incorrect diagnoses. (*Scientific American 11 August 2017*)

CHOLERA CRISIS IN YEMEN

More than half a million people have had cholera in Yemen since April this year; 2000 have died. More than 25% of the deaths and 41% of those infected were children.

Two years of conflict between pro-government forces and rebel Houthi movement has resulted in a ghastly disruption of the water distribution system and any kind of coherent medical services. There is extreme shortage of medical supplies, and more than 30000 medical health workers have not been paid for more than a year. War and conflict take a huge toll in lives and health. The cholera epidemic in Yemen is a humanitarian crisis of a disease for which both prevention and treatment exists. (<http://www.who.int/mediacentre/news/releases/2017/cholera-yemen-mark/en/>)

IN THE LONG RUN

An eye-opening commentary in the Lancet begins with the astonishing feat of a Kenyan who has run a full marathon in 2 hours 25 seconds. The article discusses possible reasons why East African runners are world class runners. The WHO recommends that children and adolescents engage in at least 60 minutes of moderate to vigorous physical activity. However, in most of the world excluding Africa, inactivity is rampant starting from very young. 80.3% of children aged between 13 to 16 years worldwide do not exercise for 60 minutes. The percentage of children who achieved the recommended 60 min or more each day of physical activity ranged from 2% in Cyprus to 14.7% in Sweden for girls, and from 9.5% in Italy to 34.1% in Belgium for boys. In stark contrast, for rural school children aged 10–17 years from Kenya, moderate physical exercise durations range 109–193 min per day for girls, and 131–234 min per day for boys. Not surprisingly, the maximum aerobic capacity levels of these children are some of the highest. The growing obesity epidemic in India is a warning that Indian children are going the same way as their western counterparts. Pediatricians can be champions for encouraging exercise in children. (*The Lancet 12 August 2017*).

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