IET India

The IET IoT panel

**Why wellness centres are the key for the success of
Ayushman Bharat Pradhan Mantri Jan Ayogya Yojana (AB- PMJAY)**

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Anand (name changed) is an 8 year old studying in a government school at Visakhapatnam. One morning while taking attendance, his class teacher realizes that he has been missing school for the day. In fact, he has been absent the previous day as well. The class teacher makes a note for the school monitoring system to check with the local Primary Health Center (PHC) to validate if Anand has an entry there for illness. While cross checking with the PHC, the health workers verify that Anand had been there with complaints of cold and cough. Incidentally in the locality where Anand is staying, a flu epidemic had broken out, the PHC has been sending health workers into the locality to raise awareness about the epidemic and to give immunization shots to the residents to prevent an outbreak and future admissions. Clearly, Technology is driving proactive intervention with the integration of school health system with the PHC data.

This a not a future scenario but a reality under the Visakhapatnam Smart City project where the health data is being shared between schools, primary health centers and district hospitals. Children are routinely monitored and their health data is recorded resulting in an increased school attendance and corresponding academic and sports performance.

The Ayushman Bharat Yojana launched by Government of India has two foundational elements:
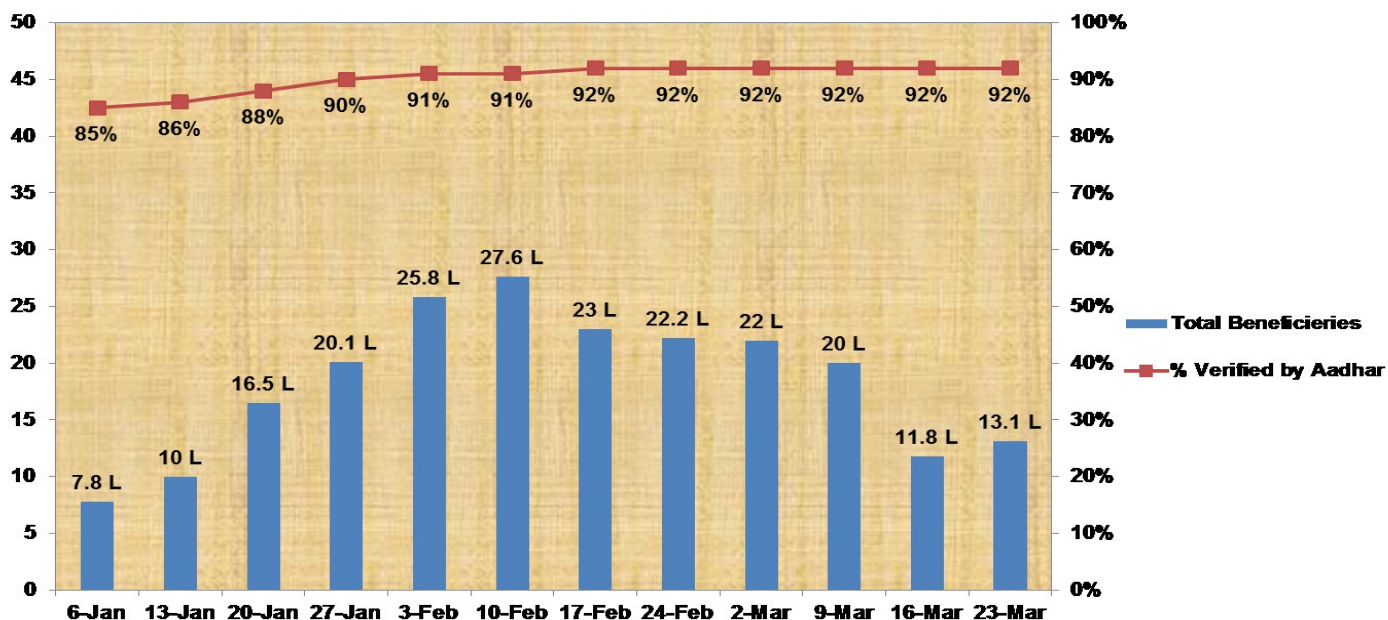
- Cashless hospitalization for up to INR 5 Lakhs per year for almost 10 crore families with no limit on the number of family members. One just has to pay a yearly premium of INR 1200
- Scheme delivered through the Primary Healthcare Centers (PHCs) for free diagnosis, medicines and monitoring the health of the community.

While we believe that the Cashless Hospitalization scheme has taken off and is relatively a huge success, some more work needs to happen for the wellness part of the Yojana.
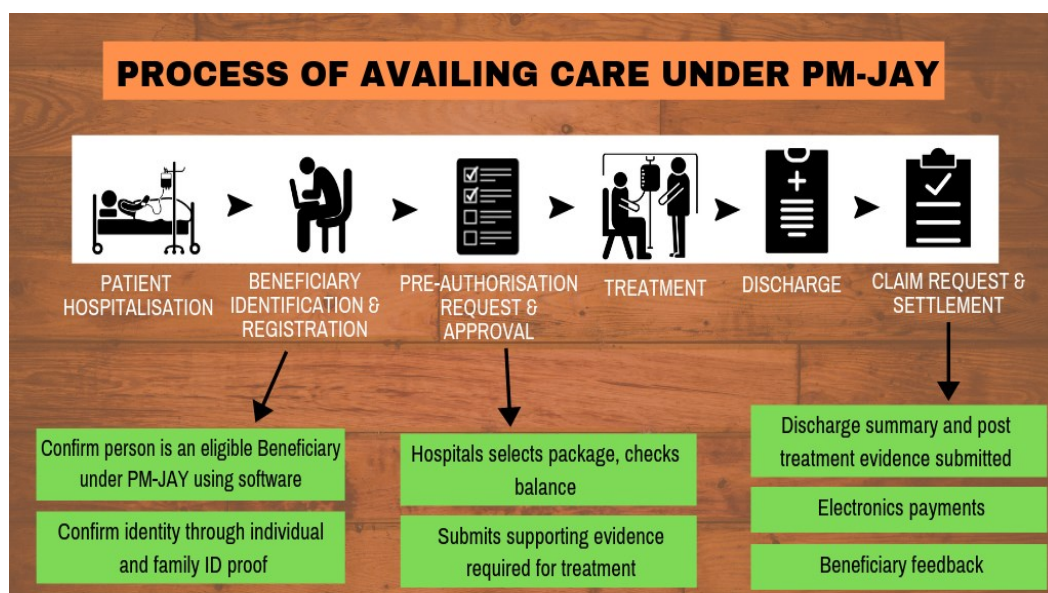
By 25 February 2019, Madhya Pradesh, Uttar Pradesh, Haryana, Jharkhand and Bihar had already made significant gains by providing over 10,958,358 e-cards whereas the highest numbers of hospital admissions were recorded in Chhattisgarh, Kerala, Gujarat and Tamil Nadu. As on 18 June 2019, 29,16,020 beneficiaries have been admitted and over 3,74,35,078 e-cards have been issued.

(Source: https://www.orfonline.org/expert-speak/ayushman-bharat-policy-perception-and-the-yet-unknown-reality-52562/)

Beneficiary identification in the month of March

Source: www.pmjay.gov.in

PROCESS OF AVAILING CARE UNDER PM-JAY

| PATIENT HOSPITALISATION | BENEFICIARY IDENTIFICATION & REGISTRATION | PRE-AUTHORISATION REQUEST & APPROVAL | TREATMENT | DISCHARGE | CLAIM REQUEST & SETTLEMENT |

Confirm person is an eligible Beneficiary under PM-JAY using software

Confirm identity through individual and family ID proof

Hospitals selects package, checks balance

Submits supporting evidence required for treatment

Discharge summary and post treatment evidence submitted

Electronics payments

Beneficiary feedback

So while the scheme is off to a good start the key to the success of the scheme is implementation of the wellness program. This would help to keep the population healthy through prevention, screening and proactive interventions.

Going global with Universal Care

India may be attempting the most ambitious universal healthcare scheme in the world there are many lessons that we can learn from similar initiatives taken globally.

If you look at internationally, most famous example comes from the country of Israel. Israel set up it Healthcare system in the year 1911. Interestingly it was set up by labor Federation of Agricultural workers, after there were multiple instances of workers not receiving adequate care while working in the various farming communities that were set up in the beginning for the growth of the country.

In 1995, the National Health Insurance law was passed ensuring Universal health care about citizens inform interest 1995 act made in short. The 1995 ACT ensured that every citizen in the state of Israel was a member of one of the four Health Maintenance Organisations (HMO). This system has resulted in a government spending on Healthcare accounting to almost 60% of the budget on primary care. All these HMO have developed Primary Square at scale with general practitioners and specialist physician delivering care from the same settings. For example at the Clalit HMO there are an almost 1400 primary care clinics with eight hospitals accounting for roughly a third of the countries beds.

In South Africa after the end of apartheid in 1990, the African National Congress government has made several attempts to improve cover for 84% of the population which depends on Primary Health Care. The most promising one is a 14 year strategy for comprehensive National Health Insurance system to cover 48 million people.

UK, since 1948 has run the National Health Services (NHS) system that provides universal health care to its citizens. The NHS is clearly a great achievement of post war Britain and enjoys satisfaction ratings and popularity ahead of the British Royal Family. The NHS is divided into 4 parts for the 4 regions- England, Northern Ireland, Scotland and Wales. Over the last 60 Years, 12 different acts have been passed to make the NHS more efficient and to improve the quality of care provided by it.

As we can see from the three examples listed above, all universal healthcare schemes have come through the government intervention. So what India needs is a two pronged strategy

- Work on ensuring maximum coverage through the Medical Health Insurance Scheme
- Strengthen the wellness centers to have adequate screening, triaging that cover the healthy population to prevent any intervention in the first instance.

Creating the case for wellness

The United Nations 2030 Sustainable Development Goal 3 is to: "*Ensure healthy lives and promote well-being for all at all ages*"

This is easier said than done. The challenge of "Access" to Healthcare plagues all the developing economies like India. This includes Availability, Accessibility, Affordability as well as Quality.
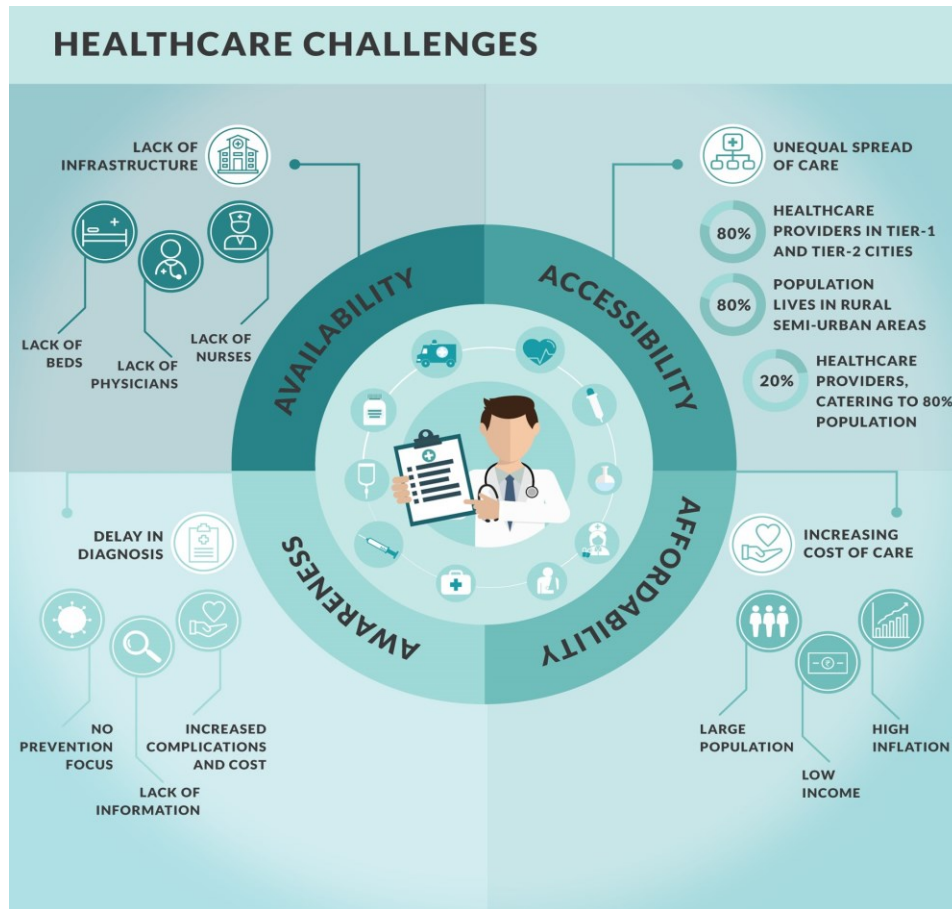
- *Availability* : Lack of adequate infrastructure and qualified professionals: The ratio of Healthcare providers (physicians, nurses, beds etc.) to patients is very low compared to WHO and global standards

- *Accessibility:* Even when available, healthcare is not accessible to all due to the demographics of the developing world. In India, around 80% of the doctors/specialists are in tier-1 and tier-2 cities, whereas 80% of the population lives in rural and semi-urban areas. Effectively 20% of healthcare providers are catering to the 80% of the population. In Rural India, 60% need to walk 4~5 Km for basic healthcare

- *Affordability***:** Most of the payment for healthcare in India is out-of-pocket and very less insurance based making it unaffordable. Also due to change in the disease patterns, the costs keep going up. A country like India with high population and low per capita income can ill afford to follow existing models of care. High diagnosis & treatment costs, increasing costs of drugs and excessive hospitalization costs prohibit people from utilizing the healthcare facilities leading to long term illness and morbidity.

Primary care is at core of Healthcare access. Comprehensive primary care reduces mortality and morbidity at much lower costs and significantly reduces the need for secondary and tertiary care. The announcement of Ayushman Bharat with its twin pillars of Health and Wellness centers for provision of primary healthcare and the Pradhan Mantri Jan Arogya Yojana represents a paradigm shift in that it looks at health holistically and lays significant milestone towards India's path to Universal Health Coverage (UHC). The Health and Wellness Centers (HWCs) are envisaged to deliver an expanded range of primary healthcare services, which address the basic primary healthcare needs of the entire population in their area thus expanding access, universality and equity in service delivery. An equally important mandate of the HWC is to ensure increased focus on healthcare prevention and promotion, so that good health and wellness becomes a Jan Andolan and ushers in collective responsibility and care. These centers should become facilitators and platform for all wellness activities including yoga in the community. The Health and wellness centers are expected to harness the potential and benefits of technology for improved service delivery, capacity building and reporting in the healthcare sector. The effective delivery of universal Comprehensive Primary Health Care will directly and positively impact the other pillar of Ayushman Bharat through the decongestion of secondary care facilities and reduction of healthcare costs.

(source: AYUSHMAN BHARAT: Comprehensive Primary Health Care through Health and Wellness Centers – Operational guidelines – Govt of India).

The Primary Health Centers have been the cornerstone of the healthcare delivery mechanism in the country. What the scheme needs is a robust mechanism by which not only can patients be monitored at large but also show the Primary Health centers are equipped with state-of-the-art facilities to make proactive intervention a reality. The 2019 budget again allocates close to INR 62659 crores to the Ministry of Health and Family Welfare for ensuring health standards for the entire population. While it is a step in the right direction, we still feel that the fundamental issues that lie with the Primary Health centers are yet to be addressed today. At best, 20% of the Primary Health centers meet any government criteria for public health. More than 25 to 30% of them operate without equipment doctors as well as medicines. Primary Health Care (PHC) system is crying out for reform with only 20% fulfilling the minimum criteria for Indian Public Health Standards. Almost 5 % of the PHCs are without doctors and almost 60% have only one doctor servicing the population. We had discussed the importance of rural health in the overall healthcare reforms in India in an article in 2017.

(Source: http://healthcare-in-india.net/public-health-2/healthcare-in-union-budget-2019/)

What the Health & Wellness Centers (HWCs) need is:

- Increased infrastructure- People , Doctors, and Material
- Strong policies to ensure that the HWCs are governed by outcomes
- Infusion of technology- More on site computing power

To bolster the presence of the HWCs, what we feel needs to be done is to create an ecosystem where private Health Services work with government supported by robust technology and program brought on from technology start-ups to ensure that 24/7 monitoring can be done. The greatest challenge in the remote areas is the availability of robust infrastructure to conduct diagnosis and help the s HWCs to determine wellness parameters are being met. We strongly believe that technologies such as IoT and AI provide a holistic solution to resolve the challenges in Healthcare Access and support the Ayushman Bharat Journey in Health & Wellness (H&W) centers by Decentralizing care – taking "care" to the people rather than people having to seek care.

So what the HWCs need is a low cost technology based portable multi-diagnostic screening and management solution that can undertake a number of tests in remote locations under harsh conditions. This solution should be able to work in resource constrained settings such as unreliable grid power, patchy connectivity with networks as low as 2G. It should be able to transmit the results wirelessly and securely to higher-level healthcare facilities and also print the test results locally if required. This solution should also be able to provide automatic basic health triage and/or advice in vernacular languages.

To cater to the services at the HWCs, number of health vitals have to be measured with portable IoT Sensor devices. The values would be triaged with basic clinical decision support system and transferred via patchy connectivity low bandwidth networks to primary care centers. The doctor would consult the ASHA worker at the sub center through audio-video and get some expert guidance from a specialist at a secondary/tertiary care hospital. Ultimately, the individual can be referred to the higher-level hospital s as required based on the disease condition.

There are a number of challenges to make this work

- Technology solution with IoT devices, seamless connectivity over low bandwidth networks, intuitive user interfaces to be operated by semi-skilled personnel, interface with authentication systems like Aadhar, AV set-up or video for consultation nwith doctor, AI/ML to do basic triaging etc.
- Security/privacy considerations to ensure protection of data
- Regulatory issues in consulting remotely and prescribing medication, monitoring
- Government policies to enable the end to end workflow and build in accountability for the various pieces coming together
- Scalability of the solution from multiple dimensions – technology, financial, reach etc.
- Comprehensive solution tying various pieces together – technology, policy, service, clinical, regulatory, insurance, government etc
- Risk and controls for the entire framework

The other concept that needs to be incorporated is home monitoring of patients especially in chronic and acute management conditions. Remote patient monitor is possible today mainly because of the availability of high quality sensors at a very low price. Monitoring vital parameters using wearable devices has also become very popular as these devices are highly accurate, reliable and can produce real time information back to the Primary Health Centre. In short, a combination of strong diagnostics, combined with remote monitoring feeds from the patients devices at home integrated with triaging at the primary healthcare center would make an effective solution.

Building the ecosystem for wellness

The most important ingredient for the success of the Wellness program is creating the right ecosystem. The ecosystem includes the provider of the PHC, the family, local physician, medical device provider, district hospital, the local health authorities, technology providers and the network providers

The challenge in the past has been that the onus of Wellness has been put on the individual. Most care providers would not intervene post discharge and would pick up the onus of care only if the patient is admitted again. Given the lack of funds and lack of resources, the only way to ensure success is to monitor patients for Wellness. This would mean a change in philosophy from defence to attack. In other words the entire mechanism has to be cleared to be proactive in identifying monitoring and managing emerging disease conditions.

The process flow for the model could be something like this below
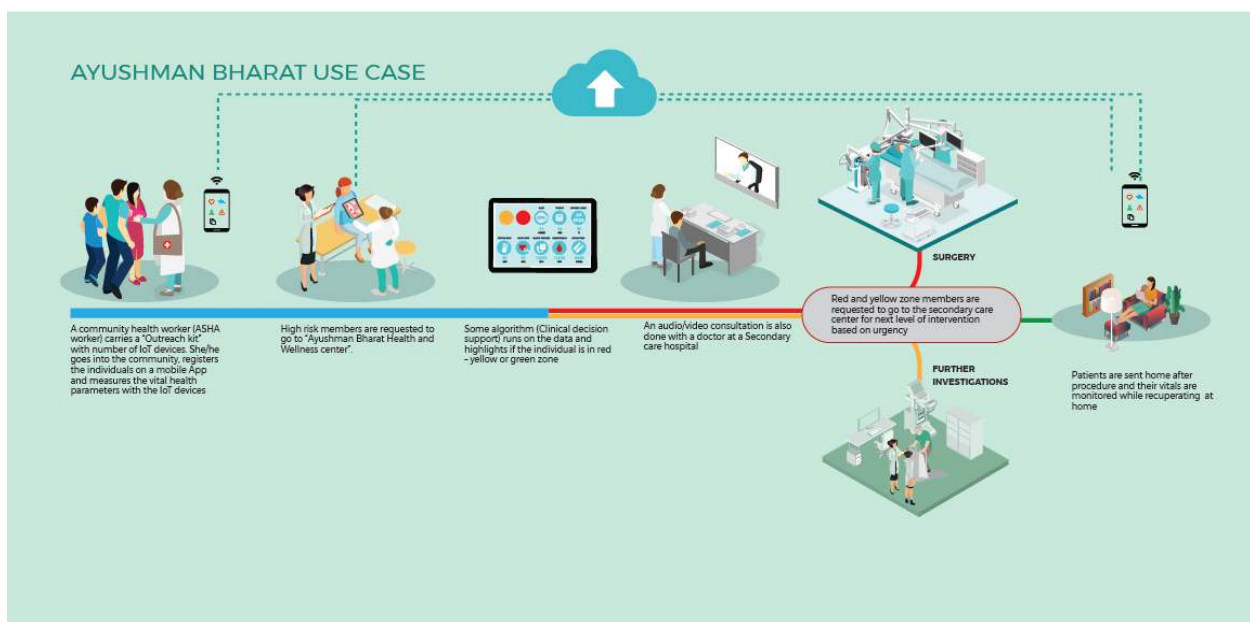
As you can see, we need a complete ecosystem of constituents to come together and create a low cost solution to make this happen.

All's well that ends well

Wellness is a new concept in India. While healthcare standards have improved, wellness needs a change in policies, technology, processes and people. The correct approach to wellness would reduce the burden of admissions in the Ayushman Bharat Program. We don't have the resources to cater to the growing population needs in the traditional mode.

Remote monitoring of patients combined with strong diagnostics capability in the wellness centers should be the dawn of a new era for India. Ayushman Bharat has started well but is there the vision and the will to end well?

The IET is one of the world's largest engineering institutions with over 168,000 members in 150 countries. It is also the most multidisciplinary – to reflect the increasingly diverse nature of engineering in the 21st century.

The IET is working to engineer a better world by inspiring, informing and influencing our members, engineers and technicians. The Institution of Engineering and Technology – India, the IET office started operations in India in 2006, in Bangalore. Today, we have over 12,000 members and have the largest membership base for the IET outside of the UK. Given the increasing global importance of India as an engineering hub our aim is to make an impact that has relevance both locally and internationally. We want to do this through working in partnership with industry, academia and government, focusing on the application of practical skills within both learning & career lifecycles, driving innovation and thought leadership   through high impact sectors. Our volunteer led panels are means through which we deliver our strategy. The IET India IoT Panel was born out of this focus.

IET India launched its IoT panel on February 20, 2015 with Dr Rishi Bhatnagar (President – Aeris Communication) as the Chairperson. The panel, being a first of its kind in India, focuses not only on technology but the application aspect of IoT in various segments.

The focus of the panel is to facilitate discussions that will help in making the inevitable connected world more efficient, smart, innovative and safe. It will lay emphasis on technology, security and regulatory concerns and the need for nurturing capabilities and talent for quicker adoption of IoT in all spheres.

The IET India IoT Panel aims at providing a platform for stakeholders to become an authoritative, but neutral voice for the evolving movement of IoT in India. It aims to enable all the IoT practitioners (including people from the hardware – devices, portables, sensors, software, business) and IoT enablers (including people from regulatory area, training area, investors in IoT, end users) to work together on relevant areas to make this industry efficient as well as robust. The panel envisions laying a solid foundation by supporting policy makers, industry in the next step of adoption of IoT.

The panel works through 12 Working Groups - Healthcare, Social Impact, Digital Communications, Smart Cities, Skill Development, Standards, Regulatory and Legal, Cyber Security, Utilities, Manufacturing, Ganga Rejuvenation, BFSI and Agriculture. If you are interested in volunteering for the IET or joining one of our panels, please write to us at india@theiet.in

Notes

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