

Answers to Your 10 Most FAQ about 5G in Healthcare

1. What is 5G?

5G is the fifth generation of cellular wireless/mobile technology. First there was 1G that was built from nothing — a clean sheet of paper. Every subsequent generation (2G, 3G, and 4G) has been incrementally built on top of the preceding generation. Specifically, 5G promises to deliver 1) speeds in excess of 1 Gbps up to ten times faster than 4G, 2) ultra-low latency <1 mSec, and 3) effective IoT to a massive number of devices. Because 5G offers higher speeds, low latency, and greater bandwidth than its predecessors, it will affect every aspect of the healthcare ecosystem from improved patient care and clinician satisfaction, faster diagnostics, remote monitoring, and more.

2. What is the difference between 4G and 5G?

The primary promise of 5G is speed. Faster data speed requires more channels and wider channels, both of which require new frequencies. 4G has used frequencies in the 700 to 2300 MHz spectrum (low-band) with 5 to 20 MHz per channel. 5G will reuse that spectrum and add operations at 2.5 to 6 GHz (mid-band) and at 24 to 40 GHz (millimeter wave high-band). Mid-band will add more channels (10 to 40 MHz each) and mmW will add wider channels (100+ MHz per channel).

The mobile network operators (MNOs) are building their 5G networks using low-band for nationwide coverage. In terms of healthcare, low-band frequencies, such as the sub-6 GHz range, can be used to enable quicker downloads of patient data, expand telemedicine, advance data analytics, and improve critical-care communications.

MNOs are using mid-band for increased capacity in higher density population areas, and using mmW frequencies in high-density, high-traffic areas such as urban city-centers, airports, and convention centers. Millimeter wave networks are limited to less than 100 meters coverage range. Signals are easily blocked by trees and buildings. mmW requires many small cells to be installed to provide direct line-of-sight service.

3. What will happen to 4G?

4G isn't going away and there will be no hard cut over. 4G and 5G will coexist for at least a decade. 5G will rely on 4G for control and fallback mechanisms.

4. How will 5G affect indoor traffic?

Indoor traffic is already estimated to be 80% of all wireless traffic. 5G will increase as new applications, such as IoT and AR/VR, among others, gain greater traction in healthcare.

5. 5G is here.

The first release of 5G, in late 2017 by the 3rd Generation Partnership Project (3GPP), was for non-stand-alone 5G New Radio (NR). In June 2018, the 3GPP finalized Release 15 (R15) for stand-alone 5G. All the major MNOs have rolled out fixed and mobile 5G services in select areas of select cities.

6. When will 5G really arrive for me?

2020 saw multiple MNO deploy 5G nationwide. These deployments use 5G NR technology combined with conventional cellular frequencies. While this does not fulfill all of 5G's promises, it is the most economical path to rapidly enable widespread 5G adoption. High-end 5G devices and smartphones are available now.

7. Why is 5G taking so long?

5G is moving forward but remember that 5G will be used in conventional frequencies, new "mid-band" frequencies, and in new mmW frequencies. The high-cost to implement the 5G mmW network, and the acquisition of local regulatory approvals for construction of the dense antenna sites, will dictate the time frame to complete the deployment. It's estimated that MNOs will invest as much as \$275 billion into 5G infrastructure before 2025.

8. Does 5G mean I should avoid investment in LTE technologies?

No. LTE is the dominant technology worldwide and it continues to grow. The key is to invest in LTE technologies today that build a strong path to ensure a solid 5G foundation tomorrow.

9. What is 5GE vs 5G?

5GE is not 5G. It stands for 5G Evolution and it's the name for AT&T's existing 4G LTE Advanced service.

10. What will 5G mean for healthcare?

5G can help healthcare increase efficiency while reducing costs particularly as IoT fuels innovations and efficiencies. Healthcare and IT leaders should budget for 5G equipment and plan for more automation, artificial intelligence, machine learning, and big data analytics.