



How a digital transformation can help improve the work of medical teams



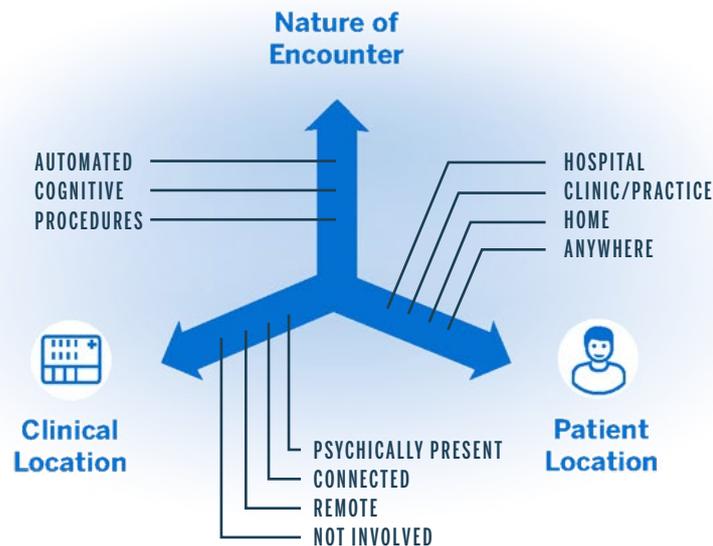
The COVID-19 pandemic has shown us how important it is for medical teams to have all patient data readily available, to be able to implement the latest guidelines, and to quickly and easily adapt to new challenges and situations. Proactively managing patients is already a challenge without a pandemic, and medical teams typically struggle to review all necessary and relevant patient information, especially when it comes to gathering information from other care settings.

Today, enormous amounts of data are being generated, but this data is fragmented and often difficult to access. Part of it is stored in various IT systems, and a large portion still exists only on paper. Medical teams usually need to login multiple times during the day to several different applications in order to obtain data about a patient's medications, observations, laboratory tests, etc., and historical paper documentation can be almost inaccessible. Furthermore, the complete healthcare system is made up of systems, algorithms, and workflows which exist in silos, and are completely disconnected. In such an environment, it is virtually impossible to manage patient pathways across all the different care settings and providers.

There are also some technological trends which are profoundly changing healthcare today: According to [McBride and Roberts](#) (Ernst & Young), advances in technologies and 5G connectivity are making a suite of new solutions connected with well-being, remote care, smart homes, and communities possible. And while complex, high-risk case and trauma care within a hospital will always be a central reality in health systems, care models across the board are migrating to lower-cost settings. Many of these lie beyond the four walls of the clinic or hospital, and are being carried out closer to the consumer — at home or in the community.

Healthcare is changing

It is becoming clear that digital healthcare solutions need to be redesigned to be able to support these ambitions with the same pace and speed.



Current EHR Solutions

- Fragmented and multiplied patient data; limited or no direct access to health data
- Limited of interoperability between vendors, technologies, and applications
- Vendor lock-in
- Out-dated interfaces, missing functionalities, very time consuming
- A lack of support for mobile devices
- Slow to change

The postmodern EHR Approach

- ✓ Full data fluidity and pathways that span health and care domains
- ✓ A unified and life-long clinical data repository (CDR) designed on open-data standards
- ✓ Support for full interoperability between vendors, technologies, and applications
- ✓ Vendor neutral
- ✓ Applications with a “care-team-driven” user experience
- ✓ Agile and modular

The postmodern approach to EHR

To cope with the challenges described above and move towards more integrated care – and virtual teams that operate seamlessly across the care domain – we must fundamentally change the current approach to healthcare IT. The focus should be on pathways and data which need to be stored and governed independently of the applications that created it. It is only with this kind of approach that we can design ecosystems of solutions that support the different needs of health and care teams, achieve maximum data fluidity, and create pathways that span all health and care domains.

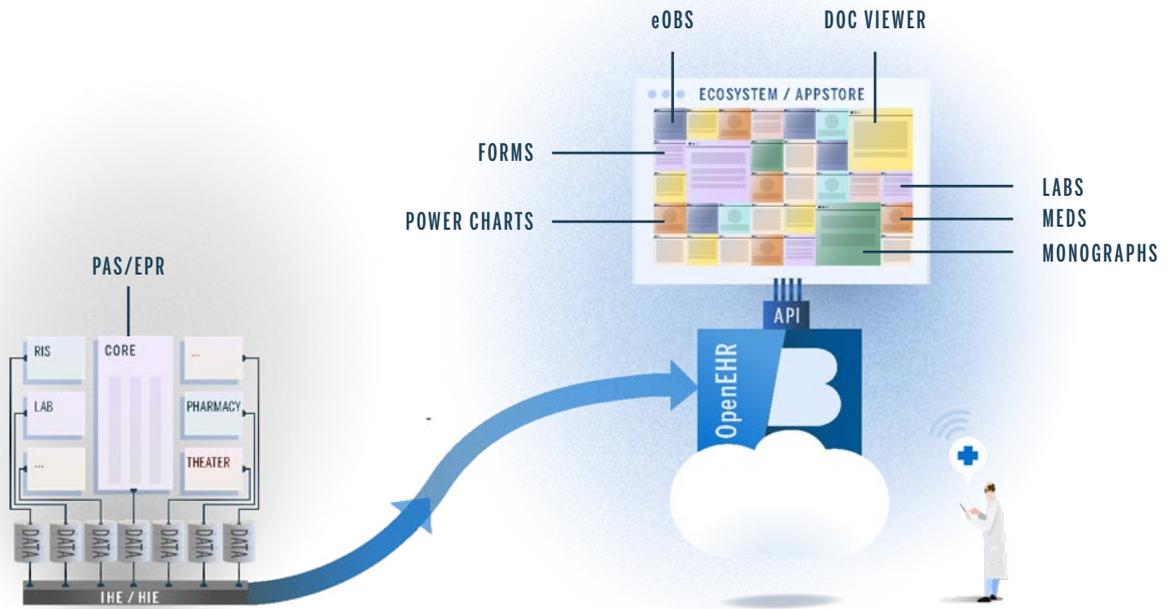
This has also been highlighted in an independent report by Ernst & Young published in June 2020 titled [How will you design information architecture to unlock the power of data?](#) In the opinion of McBride and Roberts, the technology itself is available today, but what is missing is a ubiquitous information technology infrastructure that is built on the following concepts:

- **data persistence:** data needs to persist longer than the system that generated it, and it needs to be independent of the applications that created it;
- **extensibility (and modularity):** existing and new modules, apps, or features can be used to compose the solution that best fits the needs of medical teams;
- **true interoperability:** there must be a coordinated access exchange and collaborative use of information within and across organisational boundaries.

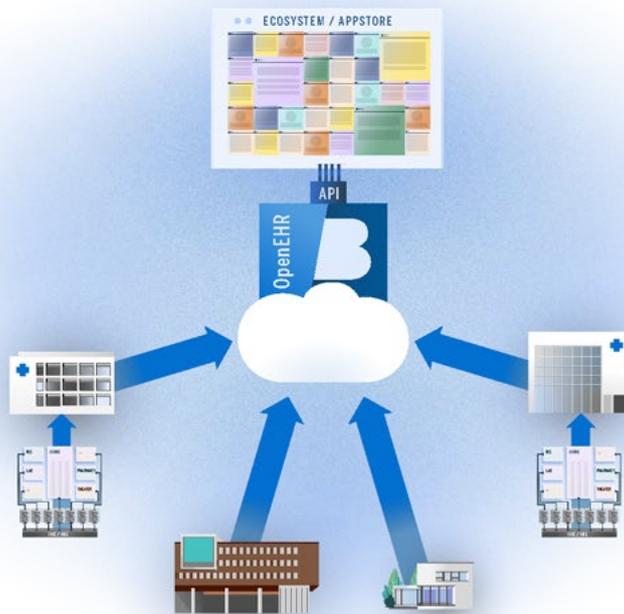
The postmodern approach to EHR systems is already addressing the abovementioned challenges. It prevents data fragmentation and vendor lock-in, is cost-effective, and supports any future developments and needs. The basic characteristics of a postmodern EHR are:

- **A clinical data repository (CDR):** health data persists in a structured and vendor-neutral format by relying on openEHR specifications. Data-points are not fragmented or multiplied and all health data is stored independently of applications. More importantly, this enables the establishment of a life-long, vendor-neutral CDR, which keeps an up-to-date record of patient information in a single place.
- **Data-centric interoperability:** this enables the simpler exchange and use of data between different information systems and healthcare organisations. It simplifies integration challenges and significantly reduces the number of integration points, as it allows all the solutions and devices to connect centrally (under strict security and access rules, of course) to the CDR.
- **Shared patient pathways:** care is given in various settings, and locations and patients must be managed and tracked proactively, regardless of their care setting or supporting IT solution. Patient pathways need to be designed and managed in a vendor-neutral way, so they can be accessed and executed by any medical team member who is expected to carry out the next step in the treatment process. With shared patient pathways, any action concerning patients is immediately visible to all the medical-team members who are treating those specific patients, regardless of their care setting.
- **A connected ecosystem of best-of-breed applications:** this approach enables the creation of a best-of-breed ecosystem of connected applications which can be developed by various vendors. Applications are based on open data within the CDR. Whenever you change an application, you no longer have to migrate the data, and each new solution that you add to the ecosystem can immediately leverage and rely on all the data in the common CDR.

AN ECOSYSTEM OF CLINICAL APPLICATIONS



A VIRTUAL PERSONAL HEALTH RECORD



The postmodern EHR approach has been proven on a hospital-based and national level, as well as in research. Better is one of the companies pursuing this approach, and in 15 countries around the world we have provided solutions that support over 50 applications and over 22 million patients.



The key benefits of the postmodern EHR approach

There are several benefits of implementing a postmodern EHR system.



More informed decisions lead to better care

Medical teams gain comprehensive access to all patient data within a single CDR through a single portal. This reduces the cognitive load of medical teams, saves time when accessing needed information, enables better decision-making, and lowers the risk of making medical errors.



Cost effectiveness

- Uses existing solutions which already work.
- Reduces vendor lock-in and works with solution providers that offer the best value.
- Removes the need and any associated costs for future data migration.
- Simplifies integration and reduces any associated costs for maintaining complex integration scenarios.
- Allows for the gradual evolution of healthcare IT based on specific needs and financial capabilities.



Data security, longevity, and interoperability

- Open data format and open API, not driven by the persistence layer.
- All clinical data stored within the CDR is anonymised.
- There is full support for role- and attribute-based access.
- There is a full audit trail & GDPR compliance.
- Strong underlying archetype-based governance.



Patients are no longer the key for interoperability

With lifelong EHR, and data stored in one place, patients have less of a burden with it comes to managing and transferring a complete paper archive of their previous conditions, treatments, medical data, etc. Patients can be certain that their medical teams (when patient consent is given) have access to the most accurate data for treatment. Patients can also integrate their health and lifestyle applications into the EHR, thus enabling doctors to track their health determinants in a more comprehensive way.



Support for integrated care systems that span across different health and care settings

A vendor-neutral CDR and shared patient pathways both enable the creation of virtual medical teams – every team member has up-to-date information about patients along with their progress through selected pathways and any planned activity.