INTEROPERABILITY – what to consider.

After reading this factsheet you should:

- Have a basic knowledge of interoperability and levels of interoperability.
- Understand the importance of interoperability.
- Know what to consider when assessing interoperability.

What is interoperability?

Interoperability is the technique through which different health information systems (irrespective of who the provider is) work in tandem and with each other to share patient data seamlessly across all networks, without any hindrances or boundaries.

What are the levels of interoperability?

Healthcare data interoperability can be divided into four main levels based on the complexity and depth of interoperability attained.

1. Foundational (Level 1): Establishes the interconnection conditions required for two systems or applications to securely send and receive data from one another.
2. Structural (Level 2): Builds on Foundational Interoperability. Structural Interoperability ensures data is structured and represented uniformly across systems allowing accurate analyse and integration of information.
3. Semantic (Level 3): Builds on Foundational and Structural Interoperability. Provides shared understanding and meaning for the user by using common underlying models and coding of the data.
4. Organisational (Level 4): To facilitate seamless data sharing and collaboration, organisational interoperability goes beyond the technical components and entails synchronising the processes, policies, and workflows of many organisations.

Why is Interoperability Important?

Interoperability is essential to provide organised and efficient data transmission between information systems. Some of the main reasons why interoperability is important are:

- Seamless data and information sharing between platforms.
- Improved collaboration and coordination due to increased access to and use of shared data among stakeholders.
- Productivity and efficiency increase due to streamlining processes and workflows.
- Integration of data from several sources offers a complete image of information which assists in better decision-making.
- Continuity of care is made possible by access to patient data.
- Promotes innovation by facilitating the integration of new technologies, applications, and services.
- Enables people to take control of their own health by giving them access to their records.
- Lower costs as duplicate tests and processes are no longer required, resource allocation is improved, and administrative burden is decreased.

Read more about the benefits of interoperability in healthcare here.

Ten things to consider

1. Standards and Protocols: Ensure that the systems you want to be able to communicate follow established standards and protocols. There are many types of standards including terminology standards, content standards and privacy and security standards. More info on standards can be found here.
2. Data Formats: Identify the data formats that the involved systems use. CSV, XML, JSON, are examples of common data formats.
3. APIs and Integration: Application Programming Interfaces (APIs) offer a set of guidelines and features that permit communication across software systems. For example, a healthcare provider organisation can enter a patient's data into a system that communicates with insurance providers and immediately establish the patient's coverage.
4. Data Mapping and Transformation: The technique of data mapping makes it possible to match data between a source and a target. It permits the useful exchange of patient data.
5. Security and Privacy: Health information privacy and security requirements are outlined in a number of national and state laws and regulations, including GDPR in the EU and HIPAA in the US.
6. Error Handling and Exception Management: To address problems effectively and reduce disruptions, define clear error codes, error messages, and escalation procedures.
7. System Scalability and Performance: Interoperability should be able to manage higher loads and make sure that data interchange procedures do not adversely affect system performance. This was discussed as part of the European Commission meeting of an expert panel on Effective Ways of Investing in Health.
8. Long-term Maintenance and Upgrades: System and standard updates, version compatibility, and communication channels should all be planned for to accommodate future changes as systems and standards develop over time.
9. Collaboration and Documentation: To assist with troubleshooting, maintenance, and knowledge transfer, document the integration process, including system interfaces, data mappings, and configuration information.
10. Compliance and Regulatory Requirements: Ensure that interoperability is in line with legislation and standards. Read more about US Policies and Initiatives and Global Government Policies and Initiatives here.