

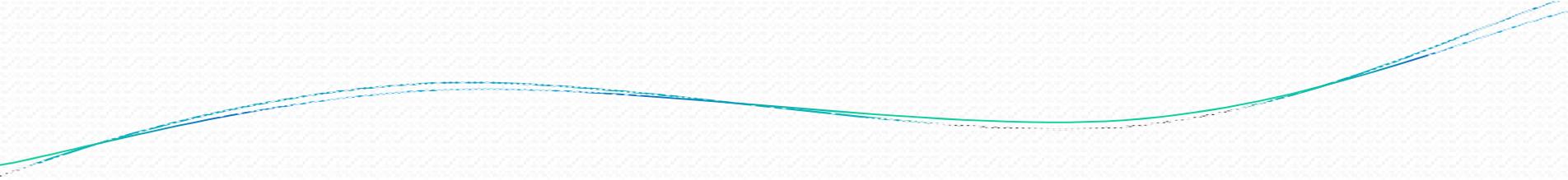
# Survey of PHR Technology

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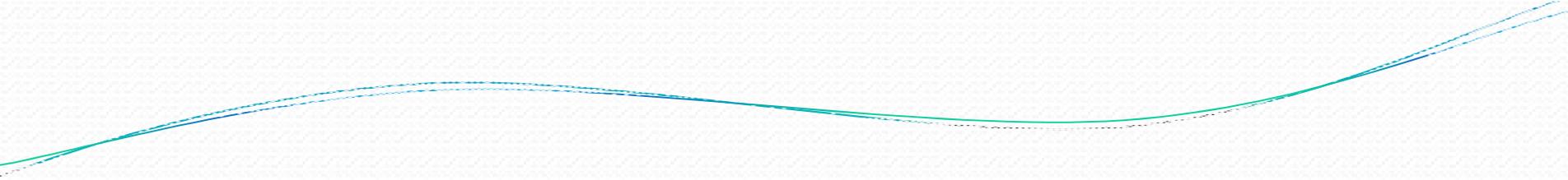
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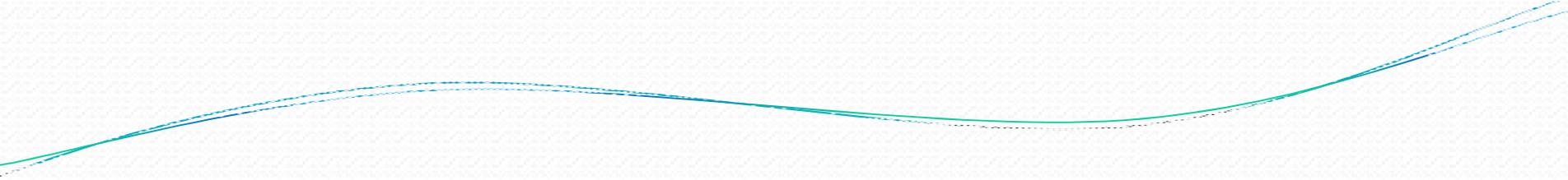
# Background

- Rising cost of healthcare makes tools for improving patient health and efficiency of care of great interest
- Electronic Health Records(EHRs) and Personal Health Records(PHRs) aim to reduce costs by improving health and efficiency



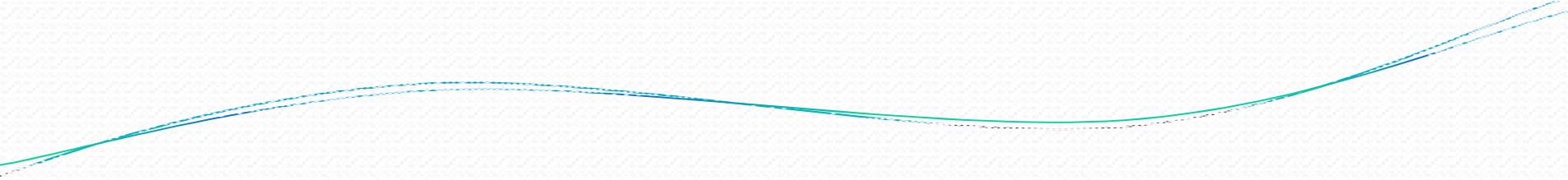
# Problems with paper records

- Expensive to maintain
- Not very portable
- Difficult to use data from multiple sources
- No automation possible



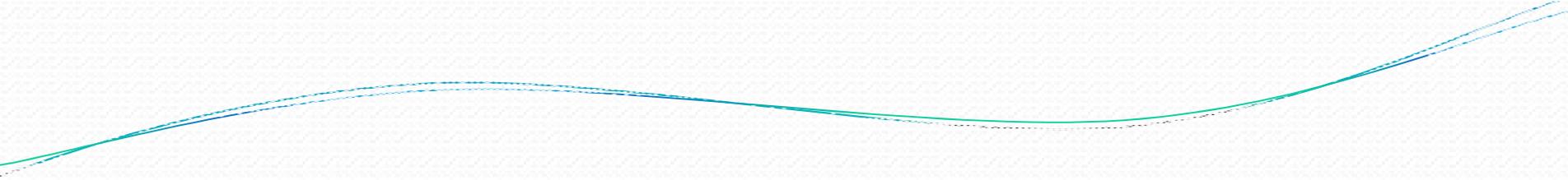
# Advantages of electronic records

- Cheaper to maintain(after initial setup costs)
- Much more portable
- Easier to combine data from multiple sources
- Makes data usable with other tools/software



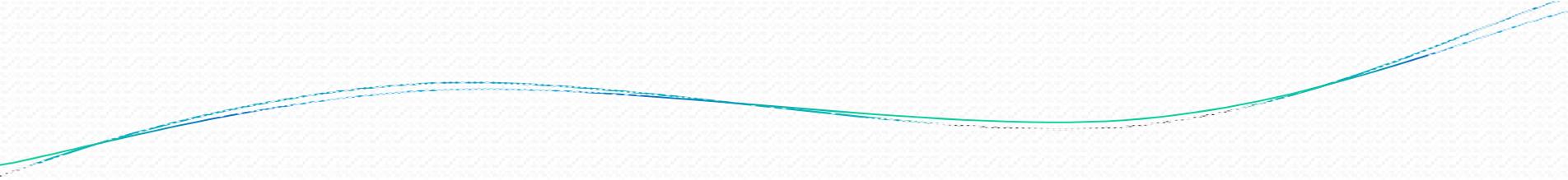
# Difference between PHR & EHR

- With PHRs the medical record is associated with the patient, not the provider
- The patient is committed to the PHR platform instead of a particular provider
- PHRs are meant to have all the patient's data in one place
- With PHRs the patient controls access to the data



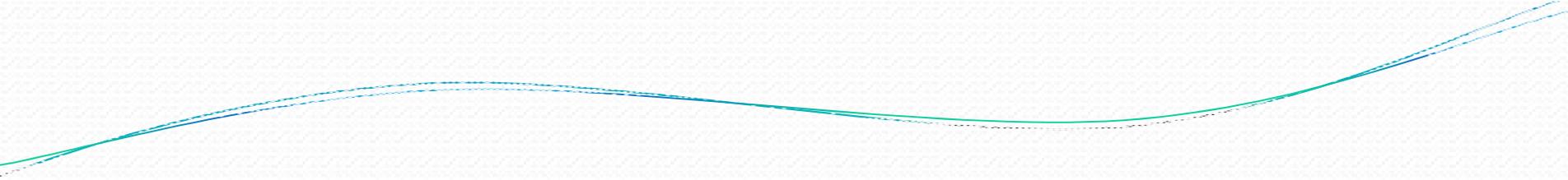
# Advantages of PHRs over EHRs

- Attempts to gather all the patient's medical data into a single repository
- Health record stays with the patient even when changing providers
- Patient control of the record leads to greater patient involvement/empowerment



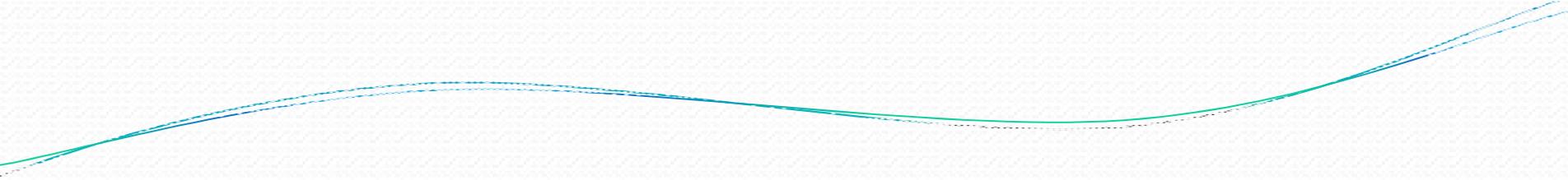
# Types of EHRs/PHRs

- Stand alone EHR
- Networked EHR
- Device based PHR
- Networked PHR
- Platform style PHR



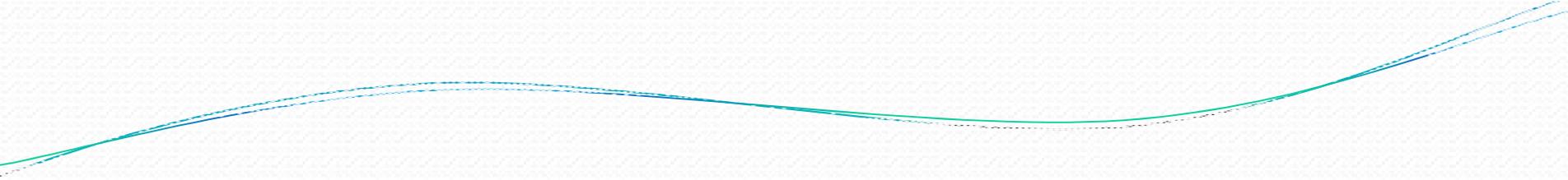
# Types of EHRs

- Stand alone EHR
  - Mostly replaced with networked EHRs, a simple electronic record keeping system for medical data
- Networked EHR
  - Makes medical records accessible and updateable over the network, allows for automatic importing from other sources



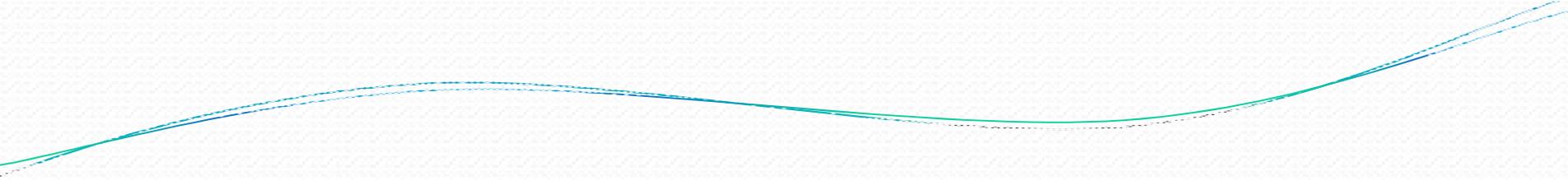
# Problems with EHRs

- Difficult to exchange records between providers
  - Providers often unwilling to share records
- Low extensibility
  - Any 3<sup>rd</sup> party tool must be customized for every EHR
- No decision support



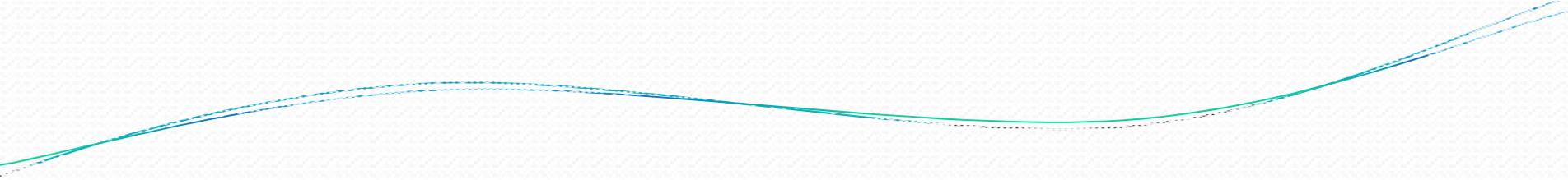
# Types of PHRs

- Device based PHR
  - A USB stick or similar device with medical record keeping software, physically very portable
- Networked PHR
  - Similar to networked EHR but the data is controlled by the patient
- Platform style PHR
  - Like networked but makes it easy to incorporate external tools



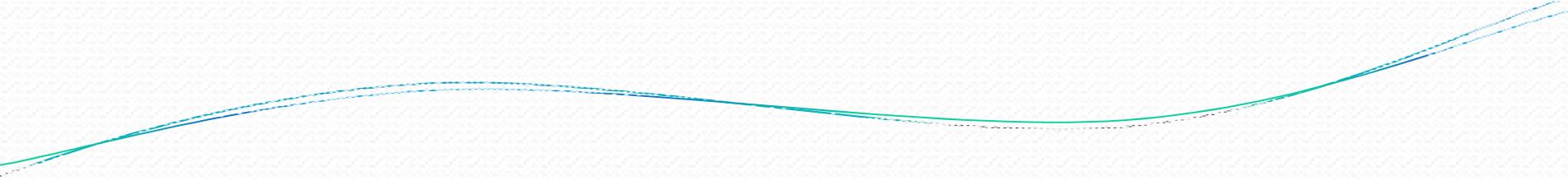
# Problems with device based PHRs

- Updating is done manually
  - The record can become outdated quickly
- Most data needs to be added by the patient
  - Error prone & providers are concerned with liability of using patient entered data
- Security risk if the device is lost
- Can potentially spread malware to provider PCs



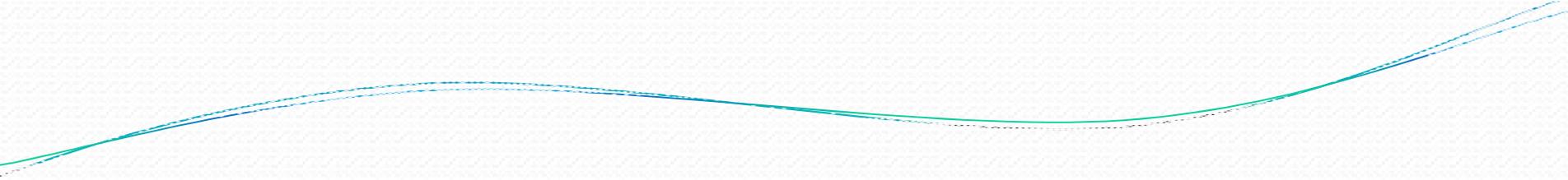
# Benefits of networked PHRs

- Can get data from many sources
- Automatic updating is possible
- Patients can easily share as much of their medical record as they want with anyone they choose (e.g. doctors, family)



# Benefits of platform style PHRs

- Highly extensible
  - PHAs developed by many vendors can be freely used
  - Competition between PHA developers drives innovation and reduces costs



# Indivo X

- Open source platform style PHR
- Basis for Dossia and MyOscar
- By design documents can never be deleted or modified, only annotated
- Uses OAuth to enable third party apps

Brian Brooks

Stephen Lewis



- Healthfeed
- Inbox
- Medications
- Problems
- API Playground
- Labs
- BP Centiles
- Sharing
- App Settings



List of medical Apps

Brian Brooks

Stephen Lewis



Healthfeed



Inbox



Medications



Problems



API Playground



Labs



BP Centiles



Sharing



App Settings



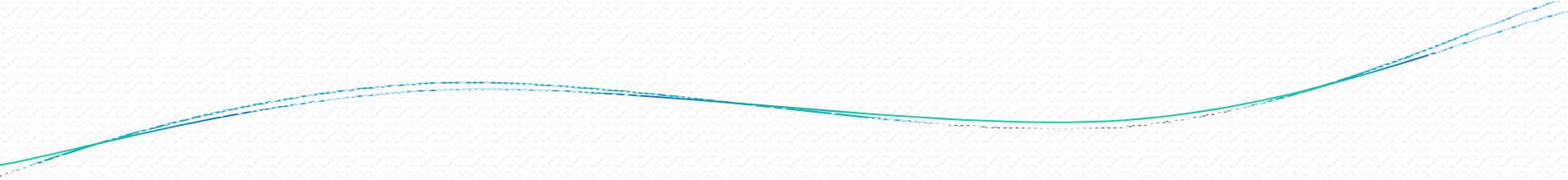
# App display area

- Healthfeed
- Inbox
- Medications
- Problems
- API Playground
- Labs
- BP Centiles
- Sharing
- App Settings



# OAuth

- Important for platform style PHRs, allows 3<sup>rd</sup> party PHAs to access the patient's record without the patient giving away their credentials
- Can set permissions per PHA
- PHAs can have permissions granted/revoked with no effect on other PHAs
- Permission can be granted to a subset of the record and have an expiration



# SMART Platforms

- Any platform PHR that implements a SMART container can run any SMART PHA with no other modifications
- Developers can write a PHA once and it will be usable with several major PHRs
- Already implemented for Indivo