

Wireless handhelds ... the future is here



**Healthspring**

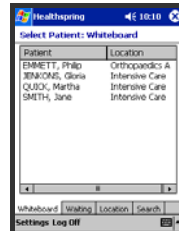
Clinical information ... anywhere, anytime

Healthspring — the handheld wireless computer software that frees clinicians from the desktop computer to be at the patient bedside where care is actually being delivered.

Searching for a patient



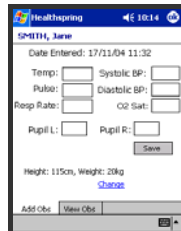
Listing patients



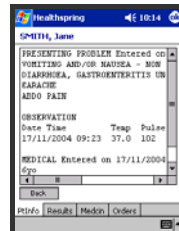
Accessing patient records



Entering observations



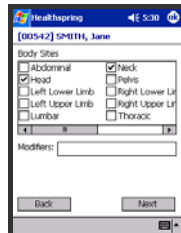
Reading progress notes



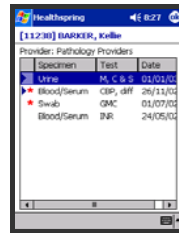
Ordering tests



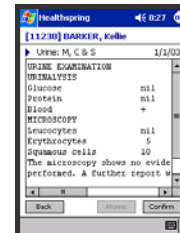
Ordering tests (detail)



Viewing test results



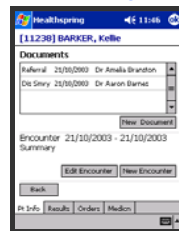
Test result detail



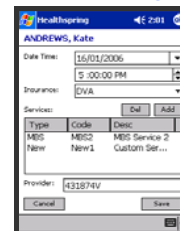
Prescribing medications



Referrals & discharge



Capturing service charges



Increased patient safety  
reduced medical and medication errors

Increased quality of care  
decision-making at point of care

Improved patient interaction  
consultation and examination assisted by instant access to data

Increased clinician efficiency  
online at the point of care

Increased scope of data  
open architecture allows access to any system

▶▶ Fewer bed-days and lower hospital costs ▶▶

## Workflow efficiency

Clinicians work more productively as the wireless technology fits in with a clinician's workflow, allowing them to access patient data and order tests during bedside consultations and examinations.

With real-time access, clinicians can avoid duplications, eg ordering duplicate tests.

Studies have demonstrated savings of:

- ▶ 3 hours per junior doctor per day in a hospital setting<sup>1</sup>, and
- ▶ 20% per shift per nurse in a domiciliary nursing service setting<sup>2</sup>.

## Assisted clinical decisions

Future enhancements include functionality to assist clinical decision-making, with an inference engine and evidence-based medical information.

For example, when a clinician places an order, they are immediately informed of contra-indications of drugs, and alerts if the treatment may be inappropriate for the patient.

## Patient safety

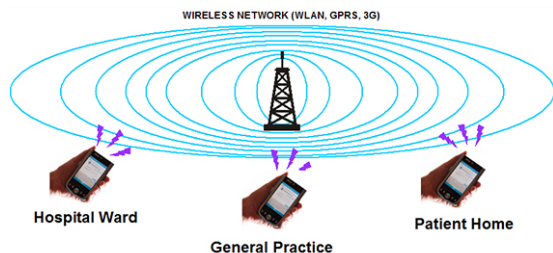
Medication errors are common throughout hospitals, and recent research in the United States found that up to 19% of all medication administered in a selection of hospitals to be in error. These are errors that can be reduced or even eliminated by providing real time information at the patient's bedside.

While the hospital system cannot support a PC at every bedside, wireless technology is making it increasingly affordable for clinicians to use a handheld PC.

<sup>1</sup> 2003 Mercury MD report commissioned by the Medical Records Institute

<sup>2</sup> 1997 Royal District Nursing Service

## Geographic scope

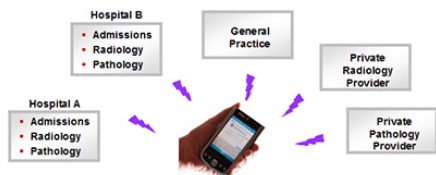


Healthspring provides mobile convenience using wireless technology, including:

- ▶ Broadband WLAN — eg hospital grounds
- ▶ GPRS and 3G — anywhere within mobile or satellite telephone network range, including patient homes.

Healthspring frees clinicians up to work **wherever** and **whenever** they choose.

## Open architecture



Healthspring's open architecture allows access to data in all hospital systems, regardless of age or technological level.

### Multi-system access

- ▶ **Consistent and modern user interface** — Healthspring provides a modern interface to aging legacy systems, extending their lifespan as they continue to serve up valuable data.
- ▶ **Upgrade back-end systems without impacting users** — Replacement of back-end systems can take place without irritation or retraining of clinicians, as the front-end screens would stay the same.

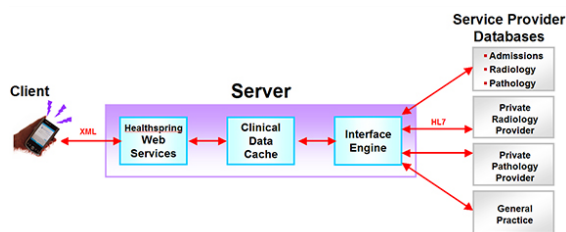
- ▶ **Flexible upgrade options** — Capital investment can be paced to suit the organisation — for example, incrementally as back-end systems are replaced — without the costs of hospital-wide change management.

### Multi-hospital access

Healthspring is designed to support the practitioner, in the way they work. For example, if a clinician worked at 3 hospitals, each with a Healthspring back-end system, the clinician can access data at these 3 hospitals using the same handheld device.

The real advantage is that the clinician does not have to learn how to use 3 different systems, just Healthspring.

## Technical Architecture



### Client

The functionally rich client software runs on handheld mobile devices. It is efficient and fast, as it uses temporary data caching.

It communicates with specific Healthspring web services on the server, sending and receiving data in XML format.

### Server

The server software runs on a Microsoft Windows server with:

- ▶ **XML web services** — responds to requests to access stored clinical data (including patient demographics, orders, results and medication) and dispatch HL7 messages.

- ▶ **Clinical data cache** — temporarily stores clinical data received from the data providers.
- ▶ **Interface engine** — receives and interprets HL7 messages from hospitals or other service providers, and sends orders created on the Healthspring client to the appropriate destination system.

The interface engine layer ensures that the underlying application need not be amended if future departmental systems support differing message protocols or versions of HL7.

### Databases

Healthspring interfaces to all systems that are relevant to the hospital requirements:

- ▶ **Internal hospital systems** — essential hospital systems such as Admissions, Radiology, Pathology, etc.
- ▶ **External systems** — systems for external organisations associated with the hospital, such as GPs, laboratories and allied health.

## Security

Data security and privacy is securely protected within the client mobile device and during transmission to the server, with:

- ▶ SSL encrypted network transmission
- ▶ Username and password authentication (server)
- ▶ Automatic logout after period of inactivity
- ▶ No patient data is stored on the handheld.



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