More time with patients ...

means better patient outcomes ...

and lower costs.
Healthcare costs – unsustainable growth

![Healthcare Costs Graph](image)

- **Healthcare costs**
  - Unsustainable growth
- **% World GDP**
  - 1960: 0%
  - 2010: 5%
  - 2050: 25%
Finding waste

On-ward paper forms and charts create an information overload.
Finding waste

- Treatment errors cost circa $2 billion pa in Australia
- Nurses spend ~30% of their time on records - $7.5 billion to run an error prone system
- The record of care is patchy at best
- Compliance is difficult to monitor
- Stress compounds

A vicious cycle

Paperwork → Stress → Increased load → Errors → Paperwork
Hospital as an information flow

Assess Patient
Record Results
Diagnosis
Monitor
Implement Care

How do current IT systems fare?

Orlitzky et al

‘... investment in digital health often occurs independent of evidence or consumer target.’

‘Existing digital health technology lacks ... evidence about impact on ... health or costs.’

Hospitals failed ‘to critically examine systems before purchase ... only 19 percent of software procurement was guided by a formal decision-making method’.
So, what's gone wrong?

- Systems not designed for clinical value
- Lack of clarity causes massive cost overruns
- High cost of ownership - can’t adapt to rapidly changing clinical needs
- User unfriendly – ‘work around’ behaviour
- Low data integrity – undermines both enterprise and clinical decision-making

SmartWard

- Four years collaboration with clinicians
- Look and feel of an App – submerged complexity
- Safety critical approach
- Evidence-based development through clinical trials
SmartWard – point-of-care touch screen computers

- Real time, digitised record-keeping
- Accessible data presented in information-rich, user friendly formats
- Clinical decision support
- Automated care plans for best practice
- Initial focus on nurses – 60% of hospital opex

Sensing & context

On the ward, sensing and context combine to:
- streamline workflow
- create a satisfying user experience
- focus skilled personnel on high-value tasks
- validate medication
Patient centricity: unifying systems

- A complete record of the patient journey.
- Care plan and records attached to the patients.
- More time at the bedside - improved patient safety and outcomes.
- Sensory capability deployed hospital-wide creates pointers to sources of information.
Clinical trial: summary outcomes

- Nurse time on documentation fell from 15.7% to 6.4%
- 61.3% of nursing documentation took place at the bedside compared to 24.8% prior to SmartWard
- Planning, assessing and implementing patient care as a proportion of nursing processes rose from 54.7% to 72.8%
- Time nurses spent interacting with patients rose from 7.95% to 23.6%
- Also confirmed nurses love it, missed care was reduced, best clinical practice compliance rose and the record was accurate

Increasing nurse time by at least 20% means:

- Time for clinicians to interact with patients
- Reduced length of stay – saves > $50k per bed per year
- 3-4000 lives saved per year
- Greater job satisfaction – less churn
- Best practice health care – circa 10% further improvement in patient outcomes
Accurate, time stamped data well-presented

- NSQHS compliance and validation
- Ease of clinical and financial audit
- Real-time hospital-wide data
- Telemedicine: decision-support and remote expert access
- No duplicated tests

An e-Health Platform for the future

- Data mining to improve clinical practice
- Use by Doctors, Allied Health, consumables management, catering
- Direct communication with medical devices
- Rapid and cheap adaptation to emerging needs
- Seamless links to rehab and home care
The future: patient interactive care

- Patients linked to friends and family via social media
- Translation services,
- Patient access to authoritative information and to their own records, and
- Supporting joint care planning and decision-making