

# **Disruptive digital technologies**

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**RACP Congress 2018**

# Digital transformation at PAH



- 833-bed tertiary hospital servicing southern Brisbane
- Complete end-to-end digital stack implemented between November 2015 and March 2017
- Awarded Electronic Medical Record Adoption Model (EMRAM) Stage 6 by Healthcare Information and Management Systems Society (HIMSS) in May 2017

# Digital transformation at PAH

HEALTH SERVICE RESEARCH

CSIRO PUBLISHING

*Australian Health Review*, 2017, 41, 646–664  
<http://dx.doi.org/10.1071/AH16233>

**Going digital: a narrative overview of the clinical and organisational impacts of eHealth technologies in hospital practice**

Perspective

Pioneering digital disruption: Australia's first integrated digital tertiary hospital

CSIRO PUBLISHING

*Australian Health Review*  
<https://doi.org/10.1071/AH17153>

**Going digital: a checklist in preparing for hospital-wide electronic medical record implementation and digital transformation**

CSIRO PUBLISHING

*Australian Health Review*  
<http://dx.doi.org/10.1071/AH16294>

Case Study

**Digital disruption 'syndromes' in a hospital: important considerations for the quality and safety of patient care during rapid digital transformation**

# EHR - on the positive

- Instantly available record accessible by multiple users at multiple locations
- Improved accuracy, legibility, structuring, reliability, retrieval of information
- Ability to add orders and initiate processes without doctors physically present
- Fewer errors in drug prescribing, dispensing and administration
- Automation of pathology and radiology requests, care plans, reminders and alerts, discharge summaries, clinical decision support and care plans
- Faster entry of vital signs and easier documentation of care plans, with reduced nursing staff documentation burden
- Rapid identification of deteriorating patients, risk situations and incomplete preventive care assessments
  - *DVT prophylaxis, pressure area assessments, ↑APTT/INR, ↑BSLs, nursing risk assessments*
- Easier investigation of incidents and discrepancies
- Patients subjected to fewer repeat questions
- Bedside display of investigations to aid shared decision-making

# EHR - on the negative

- Medical errors resulting from design glitches
- Relegation of doctors to transcription
- Charting templates filled extensively with redundant entries by copy and paste of old notes
- Error momentum
- Alert fatigue
- Automation and default bias with clinician deskilling
- Increased data entry time leading to reduced productivity (digital deceleration)
- Reduced communication among clinical team members (Pokemon Go phenomena)
- Decreased professional satisfaction and burnout
  
- Hypervigilance and unnecessary intervention
- Doctor-patient interaction displaced by doctor-computer interaction

# EHR – Positives vs negatives

## Electronic Health Records: a “Quadruple Win,” a “Quadruple Failure,” or Simply Time for a Reboot?

*Michael Hochman, MD, MPH*

The Gehr Family Center for Implementation Science, Keck School of Medicine, University of Southern California, Los Angeles, CA, USA.

J Gen Intern Med 33(4):397-9

DOI: 10.1007/s11606-018-4337-6

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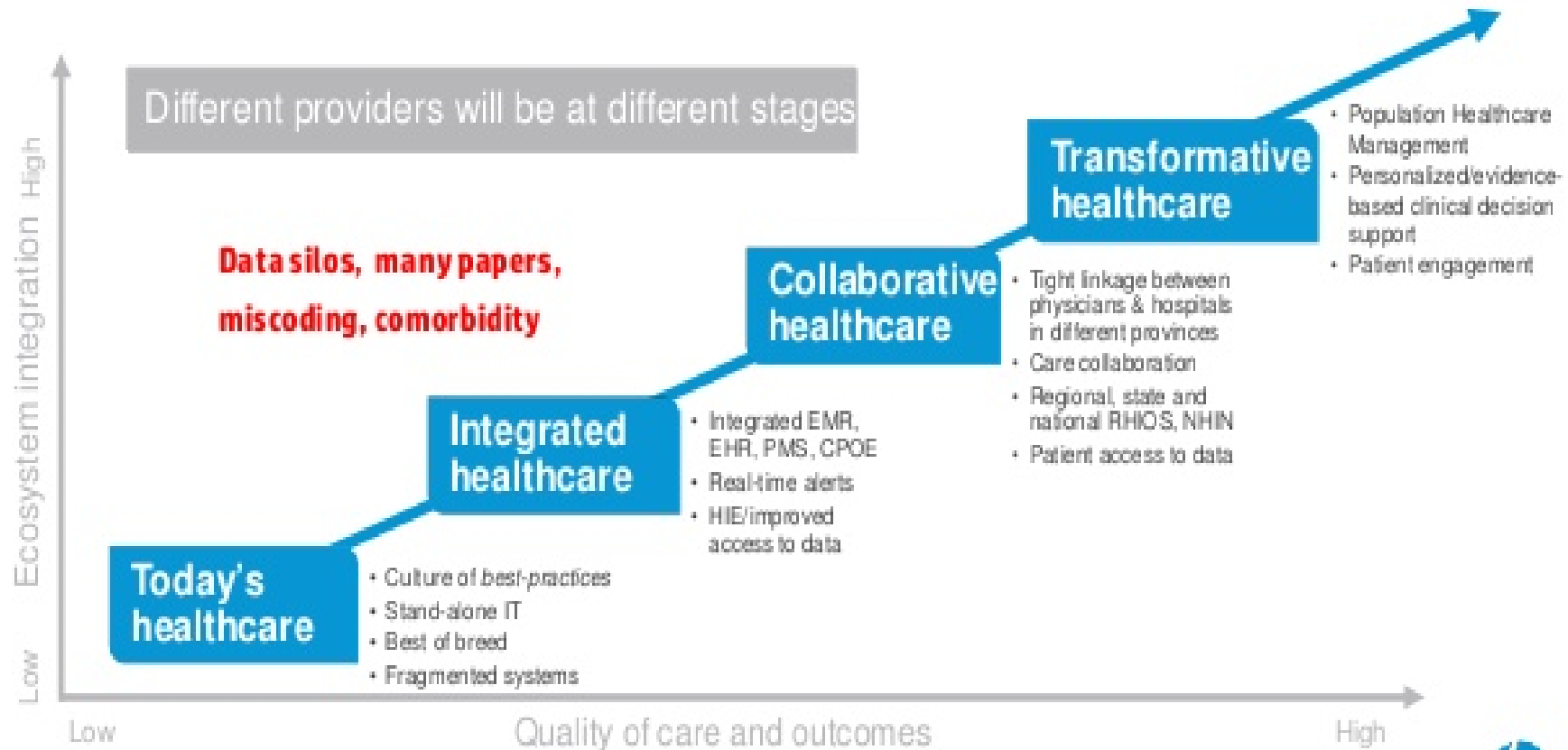
- Do you want to go back to paper charts?

# New digital technologies



## The Opportunity to *Transform* Healthcare

EHR



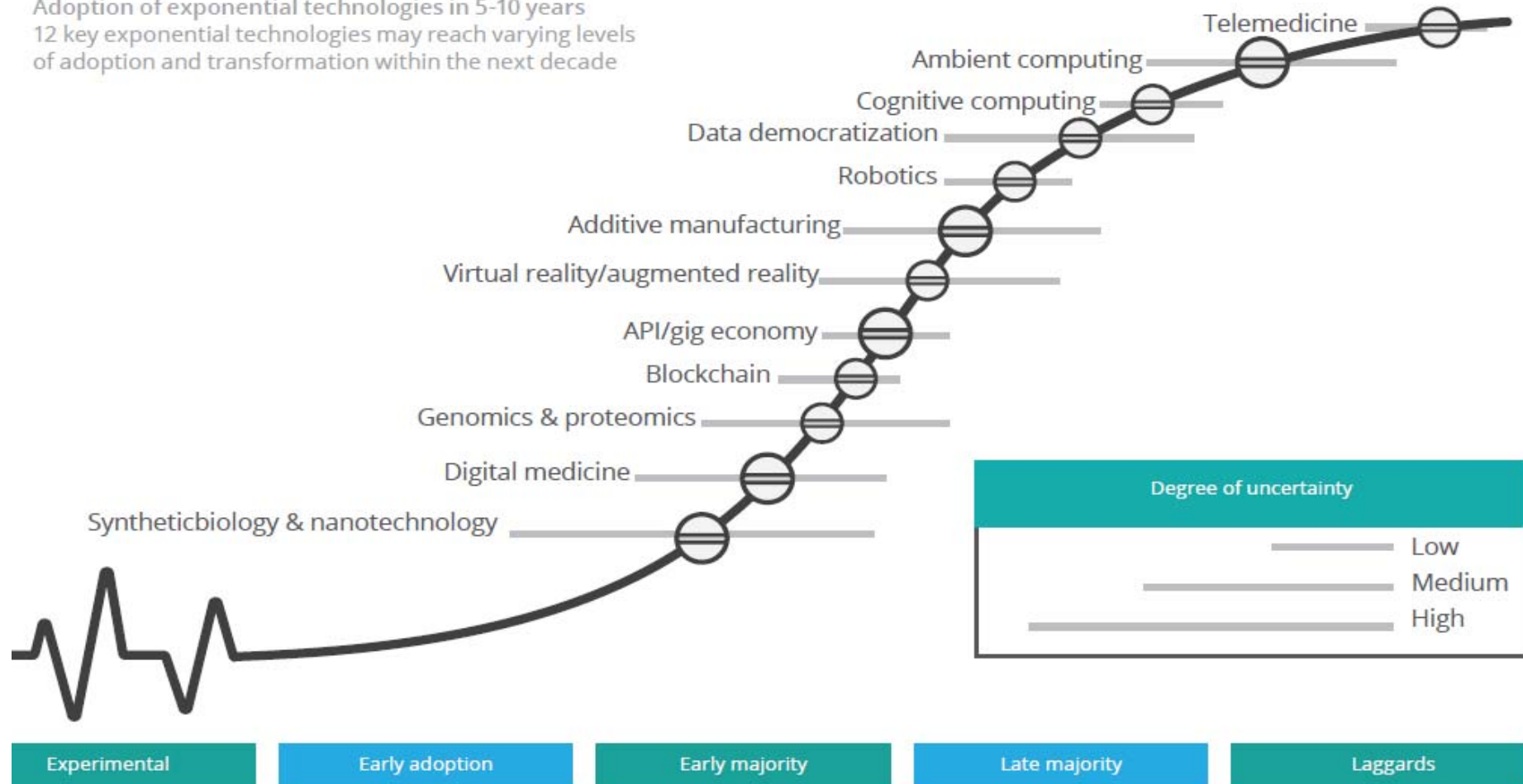
# New digital technologies

- Electronic health records
- Precision medicine and portable care
  - *Omic medicine; 3-D printing, exoskeletons, nanotechnology*
- Telemedicine and mobile health applications
- Computerised decision support systems
- Machine learning, artificial intelligence, cognitive computing
- Centralized clinical command centres and continuous digital monitoring
- Automation and robotics for care and ancillary services
- Virtual learning and development
- Intelligent staff recruitment and scheduling
- Blockchain and secure contracting through next-gen technologies



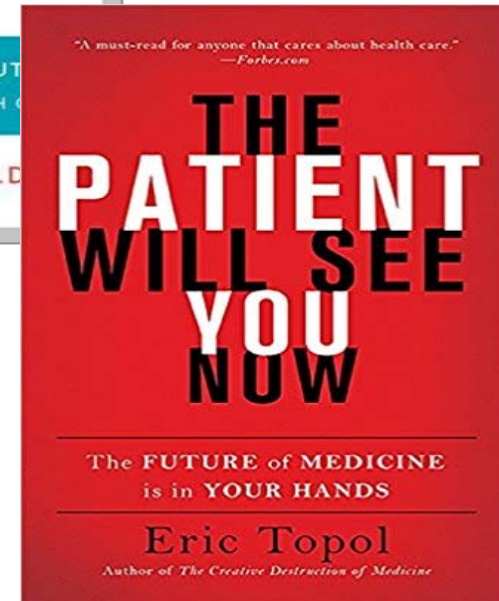
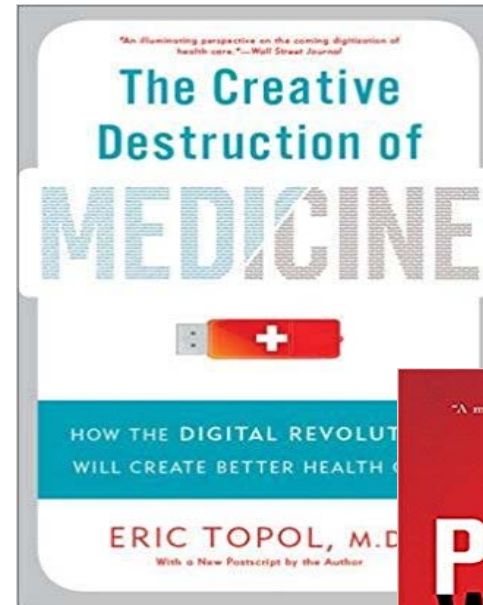
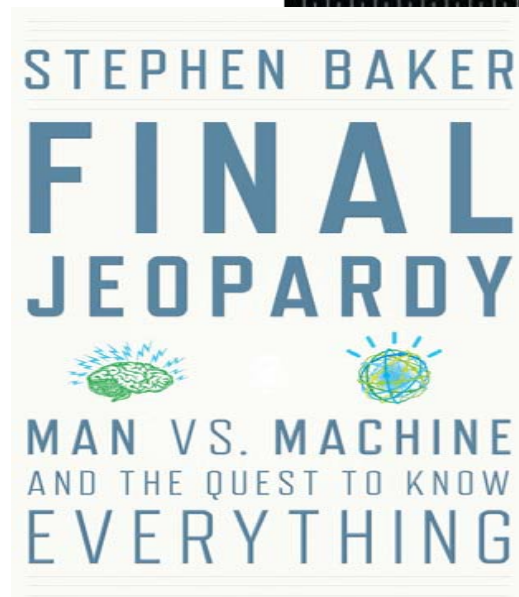
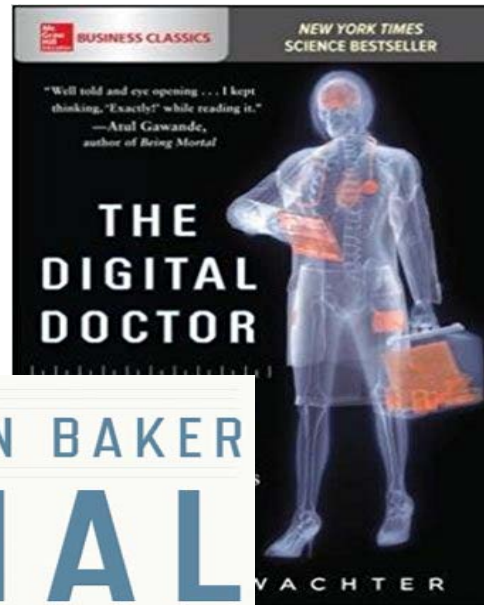
# New digital technologies

Adoption of exponential technologies in 5-10 years  
12 key exponential technologies may reach varying levels of adoption and transformation within the next decade

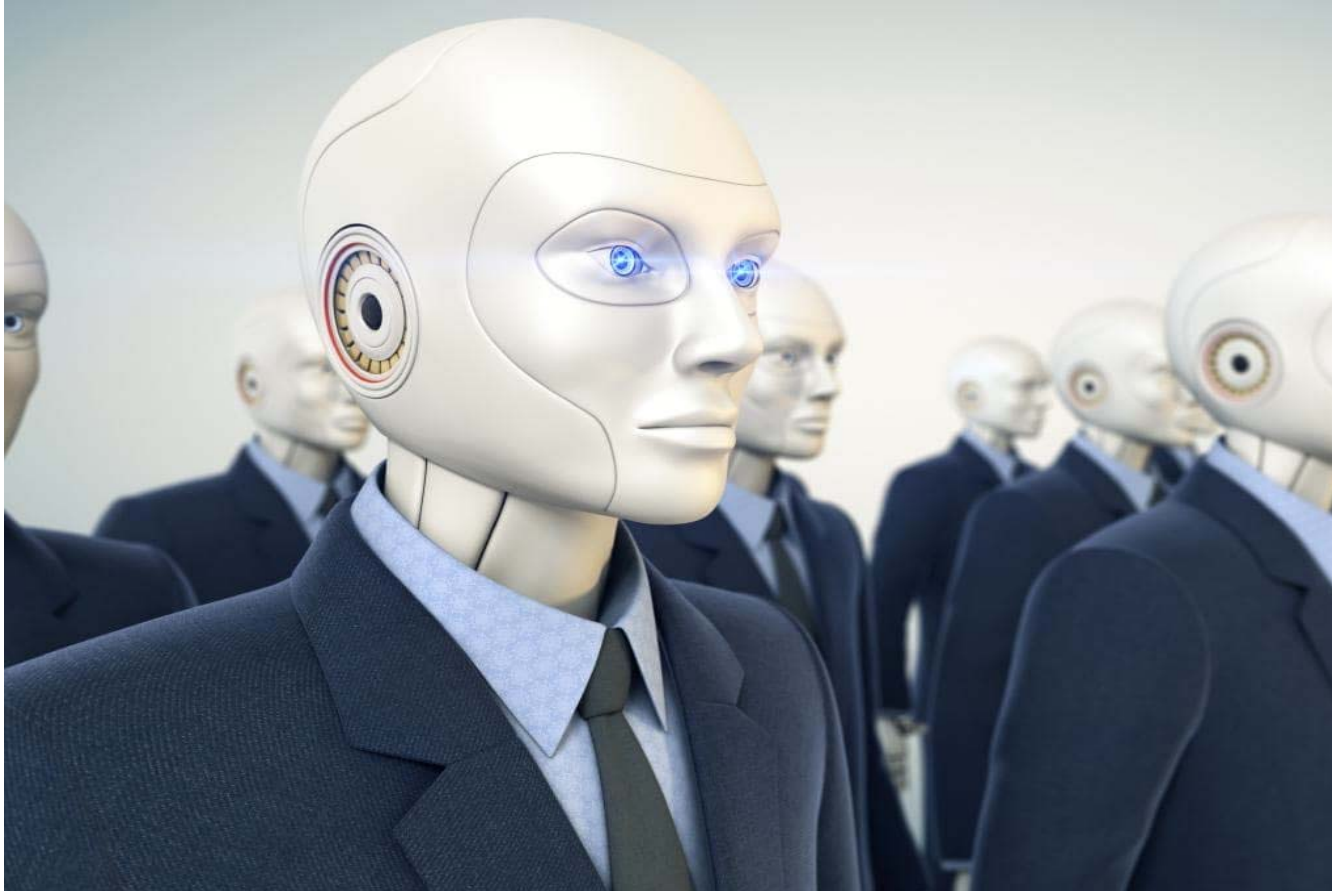


Source: Deloitte analysis

# Future challenges



# Future challenges



## THE ECONOMIST

Astonishing technology advances are set to give employees a grim choice: be replaced by a robot or get treated like one.

# Future challenges

‘My experience of IT has been one of extravagant promises followed by failure of products and then demands for more funds to fix the problems of the flawed systems, with no accountability by the IT companies....The various phases of My Health Record is the outstanding but not the only medical example. Brace yourself for many more projects to follow with IT costs stealing from medical treatment budgets.

My empathy as a treating doctor is enhanced by direct contact and forming the “doctor-patient relationship”. Remove the humanity and expect customers to get the digital flick in future, whilst doctors focus on their work-life balance during the work day in front of their screen answering the demands of customers they will never meet and won’t even know if they are real or virtual.

Anonymous 2018

# Future challenges

‘Placing patients in charge of something as complex as their health does not auger well when despite ample good information available most have a bad diet and don’t exercise, so are obese and likely to develop diabetes etc. ....Fear and apathy will probably undo hundreds of years of public health and caring medical treatment gains, as mistrust sweeps through social media and patient controlled digital medicine. Caution is appropriate to assess the systems before it is too late to reverse those which are flawed. ...”The road to hell is paved with good intentions”, and we should also be mindful of the medical quote “First do no harm!” ’

Anonymous 2018

# Future challenges

- Digital technologies are still evolving
- Involve technical, legal, ethical, organisational, and sociocultural challenges
- Need for large-scale partnerships between government, industry, researchers and consumers/carers to solve system challenges
- Integration required with existing systems
- Need for collaborative integration and use of big data
  - *while maintaining privacy and security*
- Need to build a talented digitally trained workforce
- Deal honestly and openly with disruption syndromes

# Future challenges

- Two keys to unlock benefits of digital age
  - Technology needs to improve
    - which it inevitably does
  - Clinical work needs to be reimaged for a digital age
- ‘Humans do not seem to be sufficiently creative to be able to reimagine their work in a newly technologic environment until they are actually *in* that environment’ Wachter Ann Intern Med 2016
- Age-old issue—Henry Ford: “If I asked people what they wanted, they would have said: ‘faster horses’.”