**DELIVERING HEALTH CARE
COST- EFFECTIVELY USING
AVAILABLE TECHNOLOGY**

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TELEHEALTH

**THE USE OF ELECTRONIC INFORMATION AND
TELECOMMUNICATION TECHNOLOGIES TO
SUPPORT CLINICAL HEALTH CARE**

Not just across considerable distances

**But also, within small defined geographic areas
such as a regional hospital and its
surrounding community health services**

**In each of these settings
telehealth has the capacity
to reduce the cost of health care
delivery, whilst maintaining,
and very often enhancing,
the quality of care**

HEALTH CARE IS A BUSINESS LIKE ANY OTHER

- It is far more emotive than any other, with all those in the front line striving to do everything possible to save a life or make a life more comfortable
- However, there are many areas of inefficiency, clinical, administrative and in infrastructure
  The most important of these can only be identified when adequate relevant data is collected and rigorously analysed

WHAT IS THE SOLUTION?

A management information system with the ability to monitor all treatment regimes throughout the entire health system

THE OBJECTIVE:

- Clinical pathways of statistical validity to achieve the best possible outcomes at the least possible cost

THE LIMITING FACTOR:

- Optimal decision-making can only be made when all areas of expenditure are accurately measured for input cost and output result

WHAT DO WE NEED TO MEASURE ALL HEALTH CARE EPISODES?

- 2 Kilobytes: A Typewritten page
- 2 Megabytes: A high resolution photograph
- 2 Gigabytes: 20 meters of shelved books
- 2 Terabytes: An academic research library
- 2 Petabytes: All U.S. academic research libraries

WE NEED A SYSTEM CAPABLE OF COLLECTING DATA IN PETABYTES

MEASURE AND THEREFORE MANAGE

- Look at what industry is doing:

- For example, Walmart collects **2.5 petabytes of data per hour** from customer transactions. A petabyte is 20 million filing cabinets of text

- **Do the same in health care; collect and analyse all data, allow accurate decision-making, increase safety, increase quality, reduce costs**

DOCTORS ARE THE COST-DRIVERS IN HEALTH CARE

- They decide who gets care, how much and when
- It is important to analyse all existing health care regimes so that no treatment pathway is continued indefinitely without rigorous cost-benefit analysis
- A value cannot be placed on a life but there should be statistical evidence that a particular therapeutic regime justifies its cost

WHAT IS THE MAIN ITEM OF EXPENDITURE?

- Approximately 70% of health care expenditure is labour cost
- Strategies need to be in place to ensure that all labour expenditure is cost-efficient

If we monitor and influence decision-making, large savings are possible!

MEDICAL IMPERATIVE

- Appropriate assessment must take place promptly, by medical personnel experienced in the particular discipline where decisions have to be made
- Many initial management decisions are made by junior medical staff. Up to 75% of the patients have not been treated optimally with their injuries or illnesses

QUALITY COSTS LESS: START THE BEST AVAILABLE TREATMENT ASAP

- The doctor of first contact must seek the assistance of rostered specialists whenever the care he/she can provide is likely to differ from that which would be administered by the appropriate specialist for the particular attendance
- Telehealth technology, with a reliable, high quality picture with synchronous sound, is the means to obtain an immediate specialist opinion on the best treatment regime for individual patients

DOWNSIZING OF HOSPITALS

- Part of cost-saving in health care is keeping patients out of hospital. Wherever possible care for patients should be in the community rather than in hospital, providing the care is of equivalent quality

- Telehealth allows the seamless integration of community and institutional (in-patient) services, with remote monitoring to ensure quality

DATA COLLECTION, INCLUDING TELEHEALTH, WITH iPAD TECHNOLOGY

This proposal utilises an iPad solution with SSL-encrypted security; mobile, simple to use, reliable, excellent sound and picture quality. Also, available at very reasonable cost

Every patient admitted has an iPad and bar coder, with appropriate software, attached to the foot of his/her bed/waist-clipped or hand-held

Every doctor has an iPad to enter data and communicate with colleagues

DATA ENTRY

- Every episode of care, including all resources used, are recorded for each patient. Nurses triage and enter data. Doctors diagnose and treat, entering data, using simplified ICD-10 coding, as they work, with assistance as required

- Data is entered with the bar code scanner, typescript, voice recognition or with the touch-screen entry system

ANALYSIS OF DATA

- The data is collated and analysed, comparisons of treatment and the cost of care assessed and compared with all other providers working in that health district

- The data is patient-specific as well as nurse-doctor specific and includes all investigations and pharmaceuticals ordered and referrals to specialists

- Outcome reports are prepared monthly with comparative costings between providers for the resources utilised for similar care episodes

ALL STAFF INVOLVED IN DATA COLLECTION

- Hospital-based nurses and allied health workers enter data on to the patient's personal in-patient or out-patient iPad
- Similarly, catering, transport and domestic staff enter data on all services delivered to each patient
- Medical staff have the option of entering the data in this way, or through their individual iPad, so long as the unique patient identifier is entered before the data entry
- Masses of data required. A suitable management information system to collect and interpret this "big data" makes this possible.
- WE MUST COPY WHAT OTHER INDUSTRIES ARE DOING

COSTING, per 100,000 POPULATION

- Total number of units in the four levels of care: 2,040 @ $1200.00 = $2,448,000.00
- Software company providing suitable data collection technology and 24 hour support. Annual cost $360.00 p.a. per user: $734,400.00
- $3,182,400.00 in the first year,$734,400.00 in subsequent years plus replacement costs
- Translated to the Australian population of 22,691,301 this would mean an expenditure of $722 M in the first year, $166 M subsequently

PROJECTED SAVINGS

- Expenditure of $722 million could reduce health care costs to $108 billion, a 16 fold return on investment. If the technology was developed 'in-house', the gain would be 21 fold

- In summary, savings of at least 10% in the annual national health expenditure of $121 billion could be achieved simply by measuring and auditing clinical decision-making in the manner herewith presented

INNOVATION THROUGH TECHNOLOGY TO INCREASE PRODUCTIVITY

- "Big data: the next frontier for innovation, competition and productivity". "Up to 65% gains in productivity achievable" (McKinstry)
- Follow what industry is doing; banking, airlines, retail shopping. Walmart alone collects 2.5 petabytes of data per hour from customer transactions, 50 million filing cabinets of text per hour
- If accurate monitoring of all expenditure and clinical decision-making is carried out, as suggested in this proposal, the investment would not only be highly cost-effective, but also provide an enhanced quality of care

SECURITY IMPERATIVE

- **COLLECTED DATA MUST BE SECURE, WITH DESIGNATED LEVELS OF ACCESS**
- **CLINICAL DATA MUST BE RESTRICTED TO CLINICAL DECISION-MAKERS**
- **THE COST OF SERVICE PROVISION MUST BE MEASURED, BENCHMARKED AGAINST ALL OTHER PROVIDERS FOR SIMILAR EPISODES OF CARE AND AVAILABLE TO CLINICAL MANAGEMENT LEADERS TO CHANGE BEHAVIOUR IF NECESSARY**

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BETTER CARE, BETTER HEALTH, LESSER COST

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