Evidence-Based Practice in natural medicine: opportunities and challenges for the 21st century

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Health care in Australia

Radiation bungle results in 14 deaths

John Wiseman | September 12, 2008

FOURTEEN cancer patients who received below-strength radiation treatments in a hospital bungle in Adelaide have since died.

Health authorities yesterday described the recipients as people with “very advanced cancer”, but said they were not in a position to say whether the underdosing affected their survival.

Medical errors lead to hospital deaths: report

August 25, 2008 - 7:30PM

Medical mistakes have caused 61 deaths in the past two years at western Sydney public hospitals, a new report says.

The results of a two-year review into errors at western Sydney hospitals shows surgical materials...
How Hazardous is Health Care? (Leape)

<table>
<thead>
<tr>
<th>Hazardous</th>
<th>Regulated</th>
<th>Ultra-Safe</th>
</tr>
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<tbody>
<tr>
<td>(&gt;1/1000)</td>
<td>(&lt;1/100K)</td>
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<table>
<thead>
<tr>
<th>Activity</th>
<th>Number of encounters for each fatality</th>
</tr>
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<tbody>
<tr>
<td>Health Care</td>
<td>100,000</td>
</tr>
<tr>
<td>Driving</td>
<td>10,000</td>
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<tr>
<td>Mountain Climbing</td>
<td>1,000</td>
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<tr>
<td>Chemical Manufacturing</td>
<td>100</td>
</tr>
<tr>
<td>Chartered Flights</td>
<td>10</td>
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<tr>
<td>Bungee Jumping</td>
<td>1</td>
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<td>Scheduled Airlines</td>
<td>1</td>
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<tr>
<td>European Railroads</td>
<td>1</td>
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<td>Nuclear Power</td>
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Total lives lost per year

Number of encounters for each fatality
The Quality in Australian Health Care Study

16.6% admissions in New South Wales and South Australia were associated with an adverse event (1995)

- complication of, or failure in, technical performance of an indicated procedure or operation (34.6%)
- failure to synthesise, decide and/or act on available information (15.8%)
- failure to request or arrange an investigation, procedure or consultation (11.8%)
- lack of care and attention, or failure to attend the patient (10.9%)

How appropriate is the health care delivered to Australians? A seminal study in the United States showed that American adults received “recommended care” only 55% of the time in the years 1999–2000. Estimates of “appropriate care” — defined here as care in line with evidence-based or consensus-based guidelines — are limited in most countries, including Australia, to small groups of conditions, often in particular settings.

Despite some evidence of great variations in care and poor compliance with guidelines (Box 1), no comprehensive study of the appropriateness of the health care received by Australians has been undertaken. Without such information, we will be unable to create sustainable systems that have “the capacity to measure, monitor and act on health care performance data.” Financial considerations alone would suggest that maximising the rate at which patients receive appropriate care is a national priority. The aim of the CareTrack study was to provide evidence that can support the development of strategies to improve appropriateness of care delivery in Australia.

Objective: To determine the percentage of health care encounters at which a sample of adult Australians received appropriate care (ie, care in line with evidence-based or consensus-based guidelines).

Design, setting and participants: Computer-assisted telephone interviews and retrospective review of the medical records (for 2009–2010) of a sample of at least 1000 Australian adults to measure compliance with 522 expert consensus indicators representing appropriate care for 22 common conditions. Participants were selected from households in areas of South Australia and New South Wales chosen to be representative of the socioeconomic profile of Australians. Health care encounters occurred in health care practices and hospitals with general practitioners, specialists, physiotherapists, chiropractors, psychologists and counsellors.

Main outcome measure: Percentage of health care encounters at which the sample received appropriate care.

Results: From 15,292 households contacted by telephone, 7,649 individuals agreed to participate, 3,567 consented, 2,638 proved eligible, and 1,154 were included after gaining the consent of their health care providers. The adult Australians in this sample received appropriate care at 57% (95% CI, 54%–60%) of 35,573 eligible health care encounters. Compliance with indicators of appropriate care at condition level ranged from 13% (95% CI, 1%–43%) for alcohol dependence to 90% (95% CI, 85%–93%) for coronary artery disease. For health care providers with more than 300 eligible encounters each, overall compliance ranged from 32% to 86%.

Conclusions: Although there were pockets of excellence and some aspects of care were well managed across health care providers, the consistent delivery of appropriate care needs improvement, and gaps in care should be addressed. There is a need for national agreement on clinical standards and better structuring of medical records to facilitate the delivery of more appropriate care.
Health in Australia

• Growing consumption of health care in Australia
  – Increasingly ageing population
  – Increasing co-morbidities
  – Increasing pressure on health care resources
    • Minimising wastage
  – Increasing need for quality in health care
    • Patient being an active participant
  – Chronic shortage of health professionals
  – Growth of natural medicines in Australia
    • 65-69% of Australian population use CAMs, esp for chronic and recurrent conditions (Team et al 2011)
The need for change in health care
Changes to health care

• Quality in health care
  – Health care to be underpinned by safe, effective, efficient, patient-centred, timely and equitable processes (IOM 2001)
    • Donabedian’s model of quality – structure, process and outcome

• Evidence Based Practice
  – Increasingly mandated by all health care stakeholders as means of improving health care quality
The need for evidence-based practice

• There must be “evidence” to what you, as a health care practitioner, do
• In all other aspects of life we demand “evidence” (Justice, social welfare)
• In health care, this is seen to be implicit rather than explicit
  – Avoiding overuse, underuse and misuse
What is “evidence”?

• How do you know what you do in your clinical practice works?
Where do you find “evidence”?

- Research evidence
  - Rigorous scientific demonstrations of
    - The effectiveness of particular interventions for particular groups of patients
    - The association of risk factors and outcome
    - The validity and reliability of measurements

- Clinical evidence
  - Defensible written reports of patient care
  - Review of effectiveness of treatment
    - What works for who and why?
History of EBP

1700
Chinese emperor Quainlong

1800
Founding father of medical statistics Pierre Louis

1900
British Epidemiologist Archie Cochrane
McMaster University, Canada

2000
Development of modern terminology Gordon Guyatt and David Sackett
The explicit, conscientious, and judicious use of the current *best evidence* in making decisions about the care of individual patients (and populations)

Sackett et al (1996)
Problems 1,2,3,4......

- Cookbook approach
- Cost cutting tool
- Unrealistic
- Impossible and impractical

Van Durme (2004)
Philosophy of EBP

The integration of best research evidence with clinical expertise and patient values

Evidence-Based Practice

Best research evidence

Clinical expertise

Evidence-based practice

Patient values
Purpose of EBP

• Improve quality, effectiveness and appropriateness of clinical practice
• Improve patient outcomes and shares decision-making with patients
• Substantiates the care provided to patients
• Reduce variations in practice
• Efficient use and minimise wastage of meagre resources

Cormack (2002)
Misconceptions of EBP

• Many misconceptions of EBP arise as a result of
  • Lack of knowledge of EBP
• Decisions made solely from research data
  • Denigrates clinical experience
  • Promotes a cookbook approach to patient management
• Cost cutting tool
• Clinical practice guidelines and RCTs are not EBP
• Absence of research evidence equals to evidence of absence
Limitations of EBP

- Historical reliance on quantitative research
- Need time to develop new skills
- Limited time and resources
- Shortage of coherent, consistent scientific evidence
  - Rapidly growing evidence base
- Difficulties applying evidence to the care of individual patients
  - Complexities of professional practice

Straus and McAlister (2000)
EBP process

1. **ASSESS** the patient / situation

5. **APPLY** the evidence

4. **APPRAISE** the evidence

2. **ASK** an answerable clinical question

3. **ACQUIRE** the evidence

© http://web.hku.hk/~hkebp/content/intro_2.htm
STEP TWO

- Asking an answerable question
Different types of questions are best answered by different types of studies

Is your question about treatment, aetiology, diagnosis, or prognosis?
STEP THREE

• Searching the literature
  – Key words
  – Databases (published and non-published)
  – Types of evidence
    • Qualitative or quantitative
  – Types of research
    • Primary or secondary research
  – Limitations to search
STEP FOUR
Research evidence quality dimensions

1. Hierarchy level
   • study design
2. Study Quality
   • how good is the study?
3. Statistical precision of results
   • statistical significance (p value, confidence limits)
4. Effect size
   • how clinically important are the findings?
5. Relevance
   • usefulness of results in clinical practice
STEP FIVE

• Implementing evidence into clinical practice
Growing body of research evidence
Wealth of information

Medical Articles per Year

Trials
MEDLINE
BioMedical

5000 per day
1400 per day
95 per day

Access to highly synthesised evidence
Sources of synthesised evidence

• Guidelines
  – NHMRC
  – NICE
  – NZGG
  – NGC

• Systematic reviews
  – The Cochrane Library
  – Joanna Briggs Institute
  – The Centre for Reviews and Dissemination
Evidence-practice gap

• Many patients (up to 45%) do not receive recommended care
• Many patients (20-25%) receive diagnostic tests or medications which are not evidence based, unnecessary and potentially harmful
• Poor safety and quality of health care services partly due to lack of using evidence based guidelines

Example - Hand washing
Report finds RAH one of the worst for staph infections

ADELAIDE’S major hospital is among the nation’s worst for potentially deadly golden staph infections, a report shows.

The Royal Adelaide Hospital recorded 62 cases of Staphylococcus aureus infections in the blood in 2011-12 - equal highest in the nation with Westmead in Sydney.

When the figure is compared nationally by patient bed days, the hospital ranks sixth in Australia with a rate of 2.15 per 10,000 patient days.

The national target is set at no more than two cases per 10,000 patient bed days.

SA Health has embarked on a hand hygiene program, which it credits for helping to reduce the rate to 1.4 in the nine months since the data used in the report.

Golden staph is commonly found on the skin, and in the nose and throat of healthy people, but can cause serious complications and poisoning when the bacteria finds its way into the blood.
Example - Hand washing

• Hand hygiene is important
  – Recognised since 1800
  – Treatment effect of hand hygiene is so effective “if hand hygiene were a new drug it would be used by all” (Stone 2001, pg 280).

• Even so, compliance is very poor
  – Physicians over estimate their own hand hygiene
  – Other barriers (such as patients)

Drinker survives hand sanitiser binge, sparking calls to secure liquid

AAP | June 19, 2011 12:07pm

- Man downs hospital hand sanitiser
- Drinks equivalent of 20 stubbies of beer
- Man "lucky to be alive" after gel binge

A MAN who drank six bottles of hand sanitiser while being treated in hospital for alcoholism has sparked calls for the antibacterial gels to be better secured.

Doctors at The Alfred hospital in Melbourne were stunned when they discovered the man had downed six bottles of hand sanitiser, giving him a blood alcohol reading of 0.271 per cent - the equivalent of drinking about 20 stubbies of beer.

The 45-year-old had been undergoing treatment for alcohol-related gastritis when he drank the 375ml bottles of sanitiser, which have an ethanol content of 66 per cent and are routinely used by medical staff to prevent infections spreading between patients.

Dr Michael Oldmeadow, a consultant physician at the hospital, said the man had been lucky to survive.

He said although the incident was not the first of its kind, it was the most serious case he had seen and highlighted the need for hand sanitiser bottles in hospitals to be bolted to ward walls so they could only be refilled but never removed.
Example two - Hand washing

THAT USE TO BE CALLED AN OBSESSIVE COMPULSIVE DISORDER, BUT NOW IT'S ORDINARY BEHAVIOR...
The “change” problem

• Current ideas of putting evidence into practice draws on questionable assumptions about human behaviour
  – Health professionals are sensitive to “evidence” for and against treatment

• Intention-behaviour gap
# Barriers to evidence implementation

<table>
<thead>
<tr>
<th>Factor</th>
<th>Potential barrier(s)</th>
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<tbody>
<tr>
<td>Patient</td>
<td>Patients expectations</td>
</tr>
<tr>
<td>EBP process</td>
<td>Identification and implementing EBP is a difficult process</td>
</tr>
<tr>
<td>Team Issues</td>
<td>Multidisciplinary teams, uniformity of approach</td>
</tr>
<tr>
<td>Care process</td>
<td>Lack of uniformity, range of service delivery models</td>
</tr>
<tr>
<td>Management Support</td>
<td>Changes in leadership</td>
</tr>
<tr>
<td>Time/facilities/cost</td>
<td>Time pressures, cost effectiveness, structural limitations</td>
</tr>
<tr>
<td>Health System</td>
<td>All stakeholders having similar expectations</td>
</tr>
</tbody>
</table>
Traditional implementation
Increasing research

• Implementation as a science
  – Theories of behaviour change, planned change, diffusion of innovation
  – Rogers, Procheska, Ishikawa, Greenhalgh, Grol and Wensing, Graham, PARIHS

Kitson et al (2009)
New philosophies on behaviour change

- **12 domains to explain behaviour change**
  - Knowledge
  - Skills
  - Social/ professional role/ identity
  - Beliefs about capabilities and consequences
  - Motivation and goals
  - Memory, attention and decisions
  - Environmental context and resources
  - Social influences
  - Emotion
  - Behavioural regulation
  - Nature of the behaviour
What works?

• Several reviews have been undertaken by the EPOC group with evolving evidence base
  – Consistently effective
    • Educational outreach visits, decision support systems, reminders, interactive educational meetings, multifaceted interventions
  – Variably effective
    • Audit and feedback, local opinion leaders, patient directed
  – Little or no effect
    • Educational materials alone, didactic educational meetings
  – Unknown effectiveness
    • Financial incentives, administrative interventions

What are the drivers for change for you?

- Evidence?
- Tangible benefit (money, awards)?
- Intangible benefit (recognition)?
- Support for change?
- Fear (litigation, being left behind)?
- Financial disincentive
- Pressures for others?

Grol (2007)
Challenges confronting natural medicine

• Current health care practices are not aligned with evidence

• The need to underpin evidence in policy and practice is well recognized
  – Will be increasingly become more explicit

• Evidence gaps
  – Some more researched than others

• Clinical relevance
  – Rigorous methodology vs. replicating clinical practice

• Variability in practice
  – Philosophical differences, educational differences
Opportunities for natural medicine

• EBP can be a vehicle to achieve quality and safe health care
  – E.g. emerging evidence base for massage therapy for the treatment of non-specific low back pain

• Addressing evidence gaps
  – Investing in research by partnering and collaborating with researchers

• Demonstrating sustainable and durable outcomes
  – Use of psychometrically sound outcome measures

• Increasing focus on the pointy end of getting evidence into practice
  – Using evidence to demonstrate best practice in service delivery

• Increasing awareness of, and access to, EBP resources
  – Access to current best available research evidence
  – Prompt the concept of life long learner (an important driver for EBP)
International Centre for Allied Health Evidence

A global initiative in evidence-based research for allied health practitioners

The University of South Australia is home to the International Centre for Allied Health Evidence (ICAHE). ICAHE was launched in August 2003 and is a member of the Sansom Institute. ICAHE provides essential resources for allied health workers, researchers, educators, clinicians, policy makers, administrators and patients across the world.

ICAHE provides education, research, guidance and support to inform evidence-based allied and scientific health practice, policy and education. ICAHE focusses on production, synthesis, implementation and dissemination of evidence and in collaboration with key stakeholders closes the evidence-practice gap through evidence-based practice, policy and educational strategies.

- People
- Affiliated Research Groups
- Collaborators
- Projects
- Publications
- Contact

People

Director

Professor Karen Grimmer

Deputy Director

Peter Gillard
Welcome to Implementation Central. This website was created as part of my NHMRC NICS TRACSA MAC Fellowship which aimed to bridge the gap between research evidence and clinical practice. The fellowship has now finished - but the research into Implementation Central is ongoing.

The aim of Implementation Central is to provide information about, and resources for, implementing evidence into clinical practice. This website was created in response to an existing gap in resources specific to evidence implementation and knowledge transfer. While there are large numbers of resources dedicated to evidence synthesis and access to evidence, this is not the case for the transfer of evidence into clinical practice.

Implementation Central will aim to act as a repository of resources and tools specific to evidence implementation and knowledge transfer. Implementation Central will be updated regularly, so that consumers of this website are provided with up to date information on issues pertinent to evidence implementation.

I hope you find this website useful in your evidence implementation and knowledge transfer endeavors.

Saravanan Kumar, PhD
Deputy Director
International Centre for Allied Health Evidence,
University of South Australia

What's New!
- Check the new FEATURE ARTICLE page under Resources read more
Contact details

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- iCAHE: www.unisa.edu.au/cahe
- Implementation Central: www.implementationcentral.com