The Cost of Ignoring Acute Kidney Injury

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Declaration of Interest

- AbbVie – Advisory Board for therapy for AKI
- AM Pharma – Advisory Board for therapy for AKI
- Alere – honoraria for chairing meeting
- Bioporto – Advisory Board for NGAL
- Fresenius – Honoraria for lecture at ICS
- Baxter – Honoraria for lecturing on IV Fluids
Acute Kidney Injury

The Scale of the Problem
Adding Insult to Injury

A review of the care of patients who died in hospital with a primary diagnosis of acute kidney injury (acute renal failure).

<50% of AKI care considered good – poor assessment of risk factors

43% of post-admission AKI – unacceptable delay in recognition
In Focus

The cost of ignoring acute kidney injury

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Thousands die of thirst and poor care in NHS

Up to 40,000 patients die annually because hospital staff fail to diagnose a treatable kidney problem, a figure that dwarfs the death toll from superbugs like MRSA.
Risk of Chronic Kidney Disease
The Magnitude of Acute Serum Creatinine Increase After Cardiac Surgery and the Risk of Chronic Kidney Disease, Progression of Kidney Disease, and Death

Areef Ishani, MD, MS; David Nelson, PhD; Barbara Clothier, MS; Tamara Schult, MS; Sean Nugent, BA; Nancy Greer, PhD; Yelena Slinin, MD, MS; Kristine E. Ensrud, MD, MPH

Arch Intern Med. 2011;171(3):226-233
Severity of AKI Leads to More CKD

Arch Intern Med. 2011;171(3):226-233
Outcomes following diagnosis of acute renal failure in U.S. veterans: focus on acute tubular necrosis

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Mean eGFR over different time periods after AKI severity during admission:

- **1-yr pre**
- **1-3 mo post**
- **3-12 mo post**
- **> 1 yr post**

**AKI Severity During Admission**
- **None**
- **R**
- **I**
- **F**
- **D**
Summary

• De novo AKI is associated with incident CKD and ESRD
• Risk of Death for AKI survivors may be linked to development of CKD
• AKI in patients with CKD is an accelerant for prevalent CKD
• Severity of AKI is predictive of CKD progression
Changing Face of Medicine
Hospital Population

- 25% of general population aged >60 yrs
- >85-yrs age group will double in next 20 yrs
- 66% of patients admitted >65 yrs
- 25% of patients have dementia
- Patients >85 yrs account for 22% of bed days in NHS
Hospital Population

• Many patients have
  – Multiple co-morbidities
  – More complex management issues
  – Decreased functional reserve
    • Cardiac
    • Respiratory
    • Kidney
  – Polypharmacy – e-prescribing
Raising awareness of acute kidney injury: a global perspective of a silent killer

Andrew J.P. Lewington¹,⁴, Jorge Cerda²,⁴ and Ravindra L. Mehta³,⁴

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1.2 million people per year get AKI during a hospital stay.

300,000 people die in the US annually from AKI.

More than breast cancer, prostate cancer, heart failure and diabetes, combined.

$9,000,000,000/YR

$7,500 (3 to 14,000) PER ADMISSION EXCESS HOSPITAL COSTS

3.5% ADMISSIONS

Your length of stay in the hospital increases by 12.5 days (3.5 times) if you get AKI.

Kidneys for Life
Stop Acute Kidney Injury

Think Functional Reserve!
50% loss of function before serum creatinine rises above the upper limit of normal

www.worldkidneyday.org

World Kidney Day
14 March 2013
‘It is morally inexcusable that people – mostly young people – still die of untreated acute kidney failure.’

President Giuseppe Remuzzi
ISN AKI 0 by 25

Projects Team Leaders Update

May 26 2014
ISN “AKI 0 by 25”: Team Members

**Develop Evidence for Global Burden of Disease**
- Nephrology cohorts (AKI, CKD, registries)
  - Jorge Cerda*
  - Marcello Tonelli*
- Non-renal cohorts (HIV, Malaria, Leptospirosis, CV disease, diabetes)
  - Emmanuel Burdmann*
  - Vivek Jha*

**Create Prospective Data**
- Cross-sectional Global Snap shot of AKI
  - Ravi Mehta*
  - Norbert Lameire*
- Longitudinal cohort studies
  - Guillermo Garcia*
  - Raul Lombardi*

**Develop Education and Training materials**
- Tool Kits for raising awareness of AKI
  - Fred Finkelstein*
  - Andrew Lewington*

**Implement Strategy**
- Predefined setting with baseline data available
  - Nathan Levin*
  - John Feehally*
UK Approach to AKI
Acute Kidney Injury - Renal Association
www.renal.org/clinical/guidelinessection/AcuteKidneyInjury.aspx - Cached - Similar
8 Mar 2011 ... Acute kidney injury (AKI) has now replaced the term acute renal failure and an universal definition and staging system has been proposed to ...

Acute kidney injury - NICE Guidance
guidance.nice.org.uk/cg169
28 Aug 2013 ... This clinical guideline offers evidence-based advice on the prevention, detection and management of acute kidney injury up to the point of ...

Acute kidnev iniury - NIFC Guidance
CG169 Acute kidney injury (CG169)

Acute kidney injury pathway
Fast, easy summary view of NICE guidance on 'acute kidney injury'

Acute kidney injury: Prevention, detection and management of acute kidney injury up to the point of renal replacement therapy

Clinical guidelines, CG169 - Issued: August 2013

This clinical guideline offers evidence-based advice on the prevention, detection and management of acute kidney injury up to the point of renal replacement therapy.

Guideline formats
- Web format
- NICE Guideline (PDF)
- Full Guideline
- Anaf aciwt i'r arenau: Gwybodaeth i'r cyhoedd (fformat MS Word)

Implementation tools and resources
- Baseline assessment tool
- Clinical audit tools (folder)
- Costing statement
- Slide set
- See this guidance in practice
- Research recommendations
- 'Do not do' recommendations
- Shared learning

Information for the public
Other information
Coming soon
Strippoli et al \textit{J Am Soc Nephrol} 2004

- Nephrology has a poor record of RCTs – fewest of all internal medicine specialties
- 1.5% of publications were RCTs (3\textsuperscript{rd} lowest)
- Quality of reporting is low
Outline of areas covered in CG169

- Identifying acute kidney injury in patients with acute illness*
  - Investigating for acute kidney injury
- Identifying acute kidney injury in patients with no obvious acute illness
- Assessing risk factors in adults having iodinated contrast agents*
- Assessing risk factors in adults having surgery*
- Preventing acute kidney injury
  - Ongoing assessment of the condition of patients in hospital*
- Preventing acute kidney injury in adults having iodinated contrast agents
- Monitoring and preventing deterioration in patients with or at high risk of acute kidney injury
- Detecting acute kidney injury*
- Identifying the cause(s) of acute kidney injury*
  - Urinalysis
  - Ultrasound*
- Managing acute kidney injury
  - Relieving urological obstruction
  - Pharmacological management
  - Referring for renal replacement therapy
  - Referring to nephrology*
  - Information and support for patients and carers*

* Includes key priority for implementation (KPI)
Thousands dying of thirst on NHS: Watchdog forced to issue guidelines on giving patients water

- Tens of thousands dying in hospital from kidney failure linked to dehydration
- NHS officials calculate up to 42,000 deaths a year could be avoided
- NICE issuing guidelines to help staff prevent deaths from condition
- Estimated a fifth of patients attending A&E every year suffer from the illness

By SOPHIE BORLAND
PUBLISHED: 00:00, 28 August 2013 | UPDATED: 01:41, 28 August 2013

Tens of thousands of patients are dying needlessly in hospital every year from kidney failure linked to dehydration, NHS officials have revealed.

They calculate that up to 42,000 deaths a year would be avoided if staff ensured patients had enough to drink and carried out simple tests.

NICE, the NHS watchdog, is today issuing guidelines to staff to help them prevent deaths from the condition – known as acute kidney injury – which is common in the elderly and patients with heart disease, diabetes and blood infections.
New hope for arthritis cure: Broccoli key to beating the disease

EATING broccoli could prevent arthritis, British scientists revealed today after making a breakthrough discovery.

By: Jo Willey
Published: Wed, August 28, 2013
Kidney checks on hospital patients 'would save lives'

By Michelle Roberts
Health editor, BBC News online

Hospital patients should have their kidneys checked to spot a potentially lethal condition affecting one in six of those admitted, say new guidelines.

The National Institute for Health and Care Excellence says the NHS in England could save at least 12,000 lives and millions of pounds a year if it follows its advice.

Acute kidney injury (AKI) is almost entirely preventable but kills up to one in every four sufferers.
Quality Standard

AKI quality standard being developed

Concise set of statements designed to drive measurable quality improvements

e.g Patients at risk of AKI who suffer acute illness should have their creatinine measured
Acute Kidney Injury (AKI) Programme

Acute Kidney Injury (AKI) is an emerging global healthcare issue. As healthcare increases in complexity, the interaction between long-term medical conditions, medication and intercurrent illness are too often complicated by AKI. It is estimated that one in five emergency admissions into hospital are associated with AKI (Wang et al, 2012), that up to 100,000 deaths in secondary care are associated with AKI and that 1/4 to 1/3 have the potential to be prevented (National Confidential Enquiry into Patient Outcome and Death (NCEPOD) Adding Insult to Injury 2009).

The resource and economic burden upon the healthcare economy is considerable. It is estimated that the additional cost is £500 million (data from NHS KidneyCare 2012).

Purpose and vision

The primary aim of the AKI Programme is to reduce the risk and burden of acute kidney injury.
Purpose and vision

The primary aim of the AKI Programme is to reduce the risk and burden of acute kidney injury. To do so, it will lead work on the development of sustainable clinical tools, information and levers and prioritise patient empowerment. It will engage commissioning pathways and other clinical networks whilst establishing local and national data collection and audit leading to further safety improvement. It will identify areas of research need and provide the framework to improve care quality.

Within three years the ambition is to:

1. Establish the data flows to allow successful audit and quality improvement
2. Provide clinicians and patients with the education, information and access to and about AKI to inform individual care
3. Support commissioners and organisational leads in driving and championing the need to improve AKI care.

Programme objectives

The primary aim of the Programme Board is to ensure avoidable harm related to AKI is prevented in all care settings. It will aim to do this by:
Prevention of AKI

RISK FACTORS
- Clinical history
- Electronic patient record
- Patient Education

NEPHROTOXINS
- Electronic prescribing

PHARMACOLOGICAL PREVENTION
- Cardiac surgery
- Vascular surgery
- Major surgery
- Trauma
- Iodinated Contrast

CARE BUNDLES
- High-risk patients

ELECTRONIC DETECTION SYSTEMS
- Serum creatinine
- Early warning systems

Patient at risk of acute kidney injury (AKI)
Electronic Health Record Identification of Nephrotoxin Exposure and Associated Acute Kidney Injury


*Pediatrics*; originally published online August 12, 2013;
DOI: 10.1542/peds.2013-0794
AKI intensity decreases in Year 1 of the project by 42%.

Associated with 900 days of AKI avoided in one year.

AKI Intensity = \( \frac{\text{total number of AKI days in a given week}}{\text{total number of High NTMx-exposed days in a given week}} \) * 100 days.
Novel Therapies for AKI
Alkaline phosphatase for treatment of sepsis-induced acute kidney injury: a prospective randomized double-blind placebo-controlled trial


Peter Pickkers (P.Pickkers@ic.umcn.nl)
Mortality & RRT in AKI subgroup
AM-Pharma announces positive Phase I data on recAP for Acute Kidney Injury

Trial shows recAP to be safe and well tolerated at maximum dose and ready for Phase II development

Bunnik, The Netherlands, 26 March 2014. AM-Pharma B.V., a biopharmaceutical company focused on the development of recAP (recombinant human Alkaline Phosphatase) for inflammatory indications, announces the results of its Phase I trial with both single and multiple ascending doses, which demonstrate that recAP is safe and well tolerated at all doses.

In total 50 healthy male and female volunteers were included in the randomised, double-blind, placebo-controlled, first-in-human, single and multiple dose escalation study, to investigate safety, tolerability,
aki frontiers

Date: Friday 26 September 2014

Venue: Royal Society of Medicine
1 Wimpole Street
LONDON
W1G 0AE

Organised by: Nephrology Section

Accreditation: CPD - Applied for
‘Kidneys are for Life’
Thank You