

# Acute Kidney Injury

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## Could preventing acute kidney injury hold the key to cutting the number of avoidable deaths on the NHS?

”One in five emergency admissions to hospital will have AKI”

”AKI is 100 times more deadly than MRSA infection”

”Around 20 per cent of AKI cases are preventable”

”costs of AKI to the NHS are £434-620m pa”

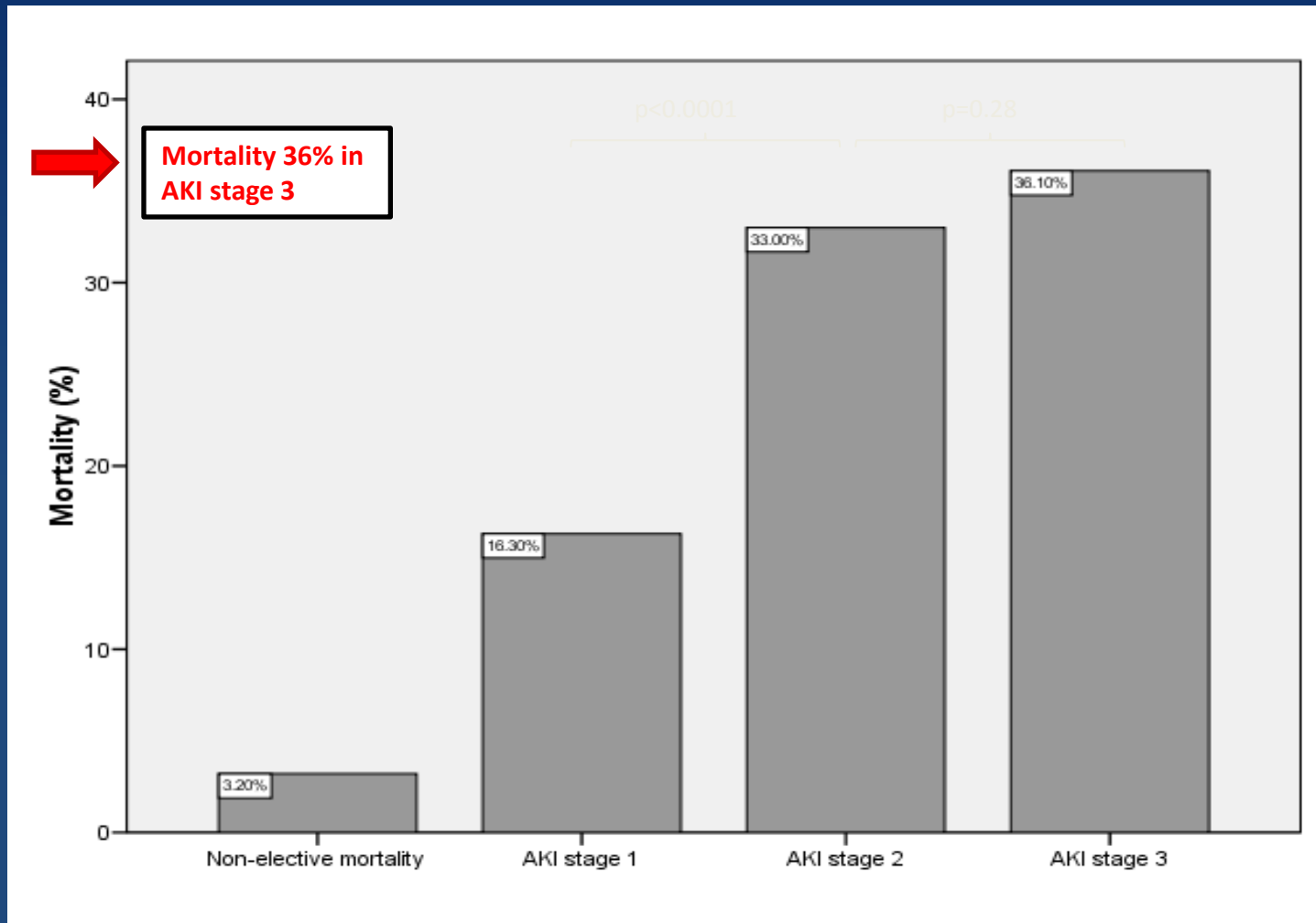
Number of patients per annum sustaining each stage of AKI in 1000-bedded hospital

# Definition of AKI

AKIN stage	Serum creatinine criteria	Urine output criteria
1 <b>2727</b>	An increase of more than $26\mu\text{mol/l}$ above baseline (within a 48hr period) OR An increase of more than or equal to 1.5 to 2 fold from baseline	$<0.5\text{mg/kg/hr}$ for at least 6hours
2 <b>782</b>	An increase of more than or equal to 2 to 3 fold from baseline	$<0.5\text{mg/kg/hr}$ for at least 12hours
3 <b>636</b>	An increase of more than 3 fold from baseline OR Serum creatinine $\geq 355\mu\text{mol/l}$ with an acute rise of at least $45\mu\text{mol/l}$	$<0.3\text{mg/kg/hr}$ for at least 24hours OR Anuria for $>12\text{hours}$
<b>total: 4145</b>	OR Initiation of RRT	

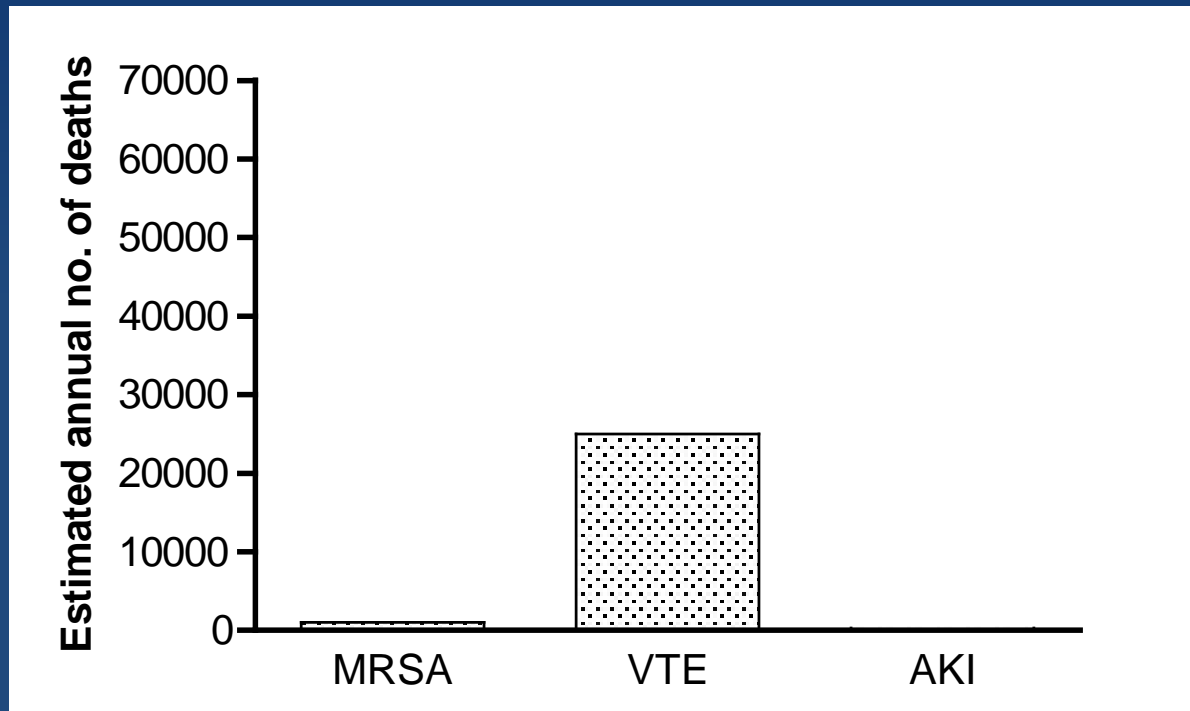
# High mortality rates in hospitalised patients with AKI

- In a UK hospital-wide population with AKI: mortality 23.6%



‘reducing avoidable death, long-term disability and chronic ill health...’

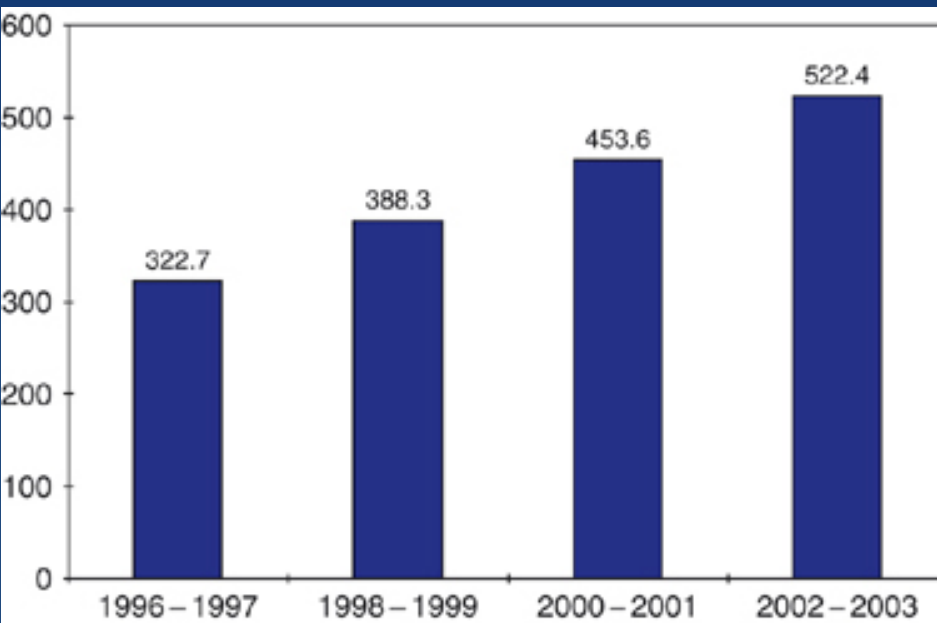
- VTE prevention: estimate 25,000 deaths pa



*Data derived from: Hospital Episode Statistics Annual Report 2010, DoH VTE Prevention Programme 2010 and Selby et al 2012*

# Incidence of AKI is increasing

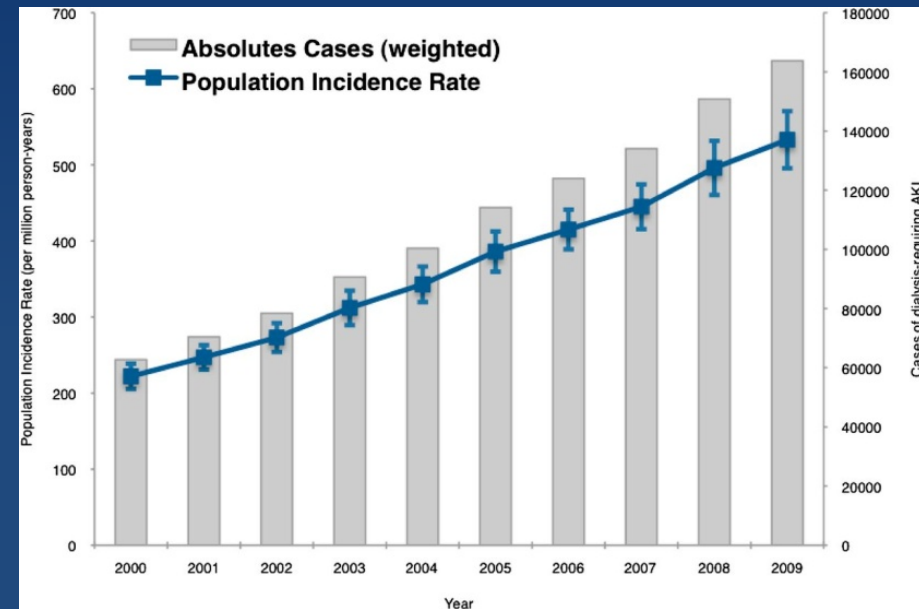
## AKI not requiring dialysis



Hsu CY et al. *Kidney International* (2007) **72**, 208

\* Per 100,000 person years

## Dialysis-requiring AKI



Hsu RK et al. *JASN* 2013;24:37-42

\* Per million person years



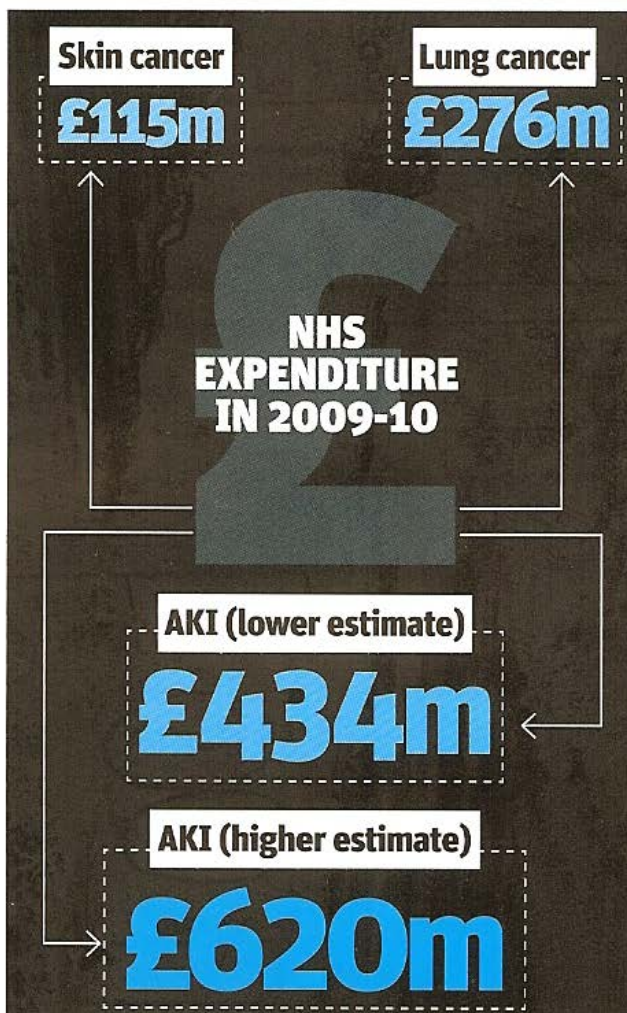
# The cost of AKI

## COSTS OF AKI TO THE NHS IN ENGLAND IN 2009-10

	Lower estimate	Upper estimate
Acute admissions	£151m	£203m
Critical care	£141m	£217m
Renal replacement therapy	£142m	£200m
<b>TOTAL</b>	<b>£434m</b>	<b>£620m</b>

Patients with AKI stay an average of 4.7 days longer in hospital

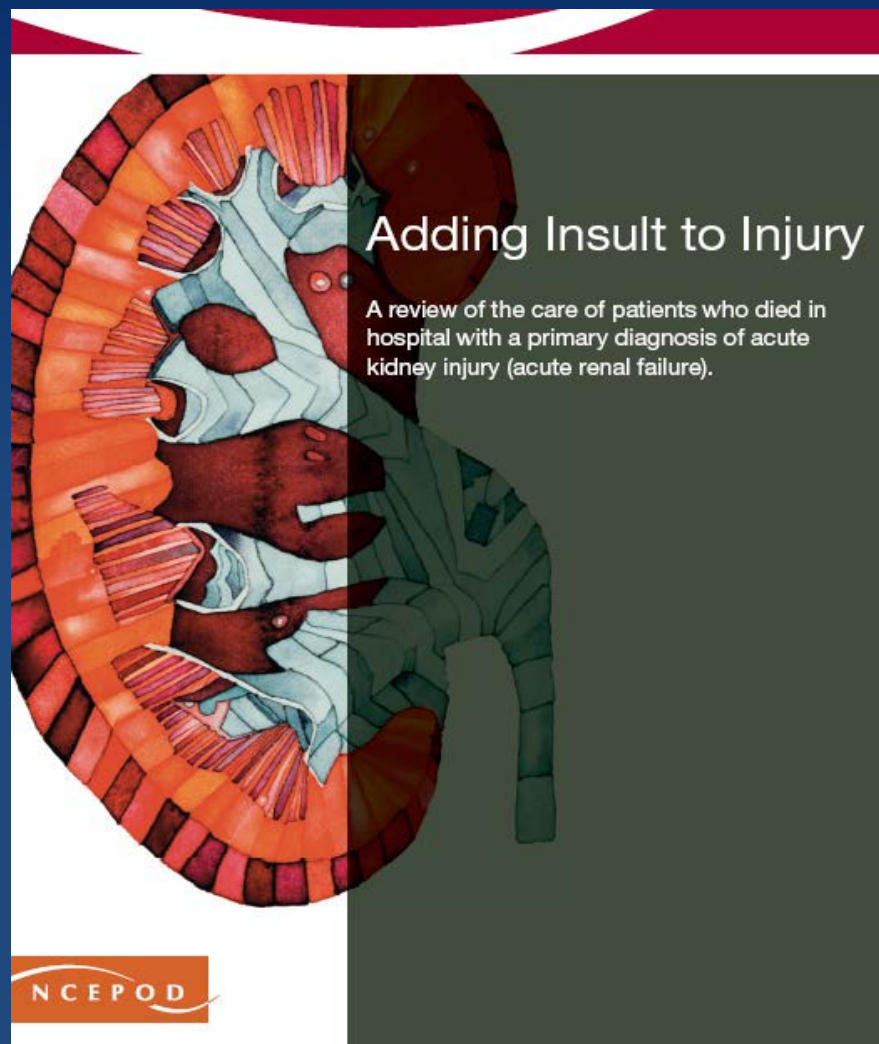
Prevention of **30%** of AKI cases  
 would save the NHS  
**£130m** to **£186m**  
 per year



Source: NHS Kidney Care, The Economic Impact of Acute Kidney Injury

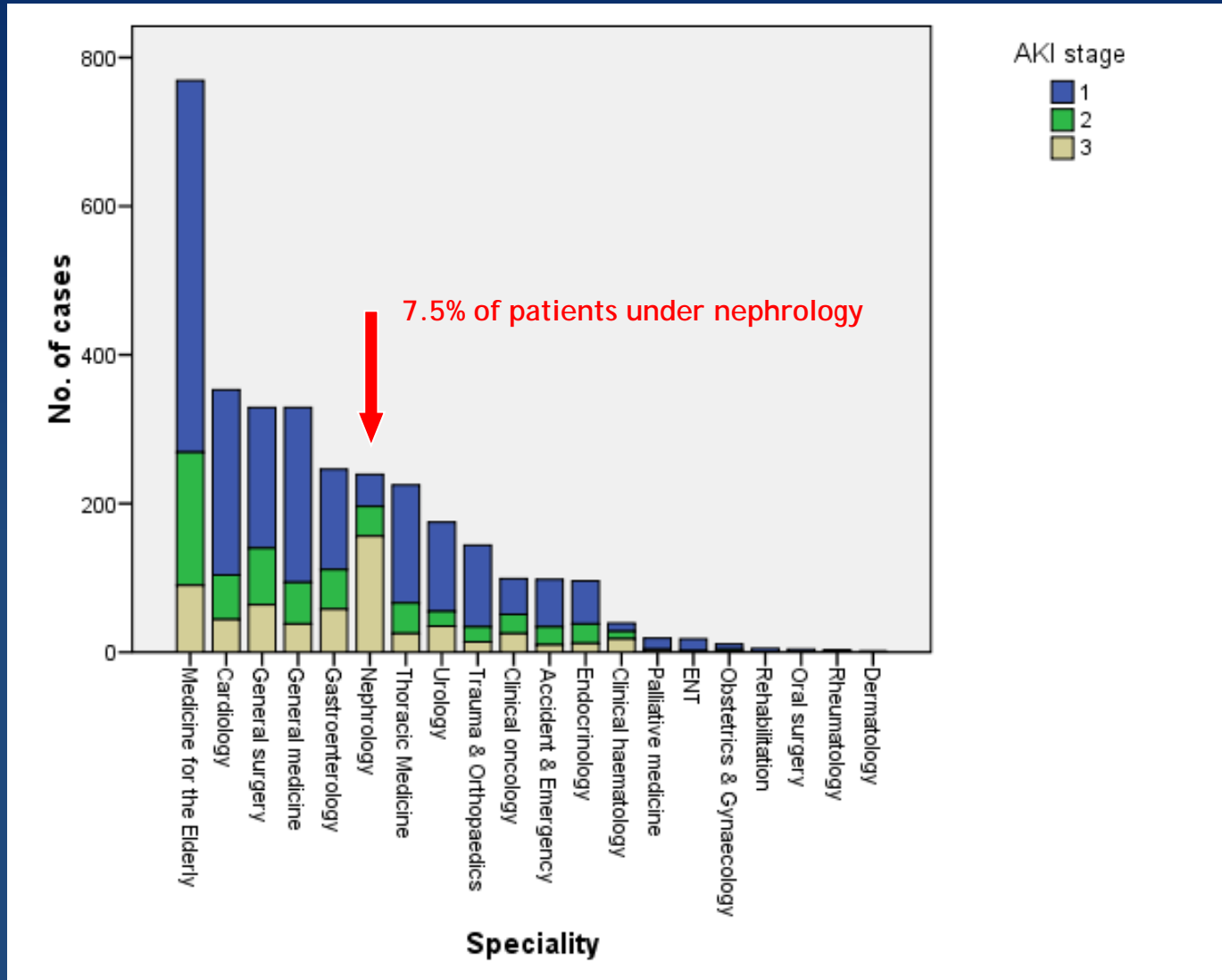
# NCEPOD report published in 2009

- Poor assessment of risk factors for AKI – **missed opportunities for prevention**
- **Delays in recognising AKI**
- **'Good' care in <50% cases**
- **Post admission AKI avoidable in 21% of cases**
- **Problems accessing specialist services**

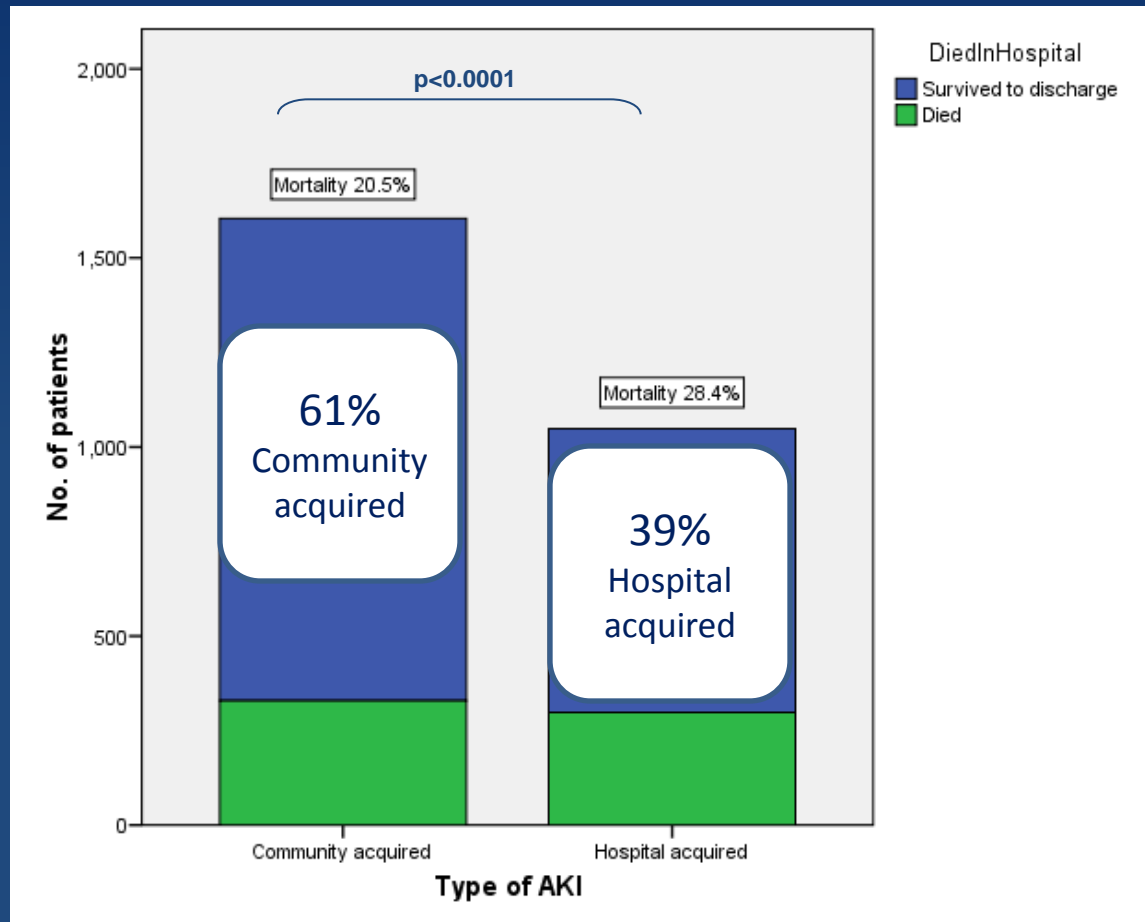




# AKI distribution across specialties



# 'Community acquired' AKI accounts for two-thirds of cases



# NHS England AKI Programme Board

Partnership agreement

Steering committee

Tools

Implementation

Risk

Definition & e-alert

Education

Interventions

Registry & audit

Pathfinder

Primary care

Secondary care

# Pathfinder projects

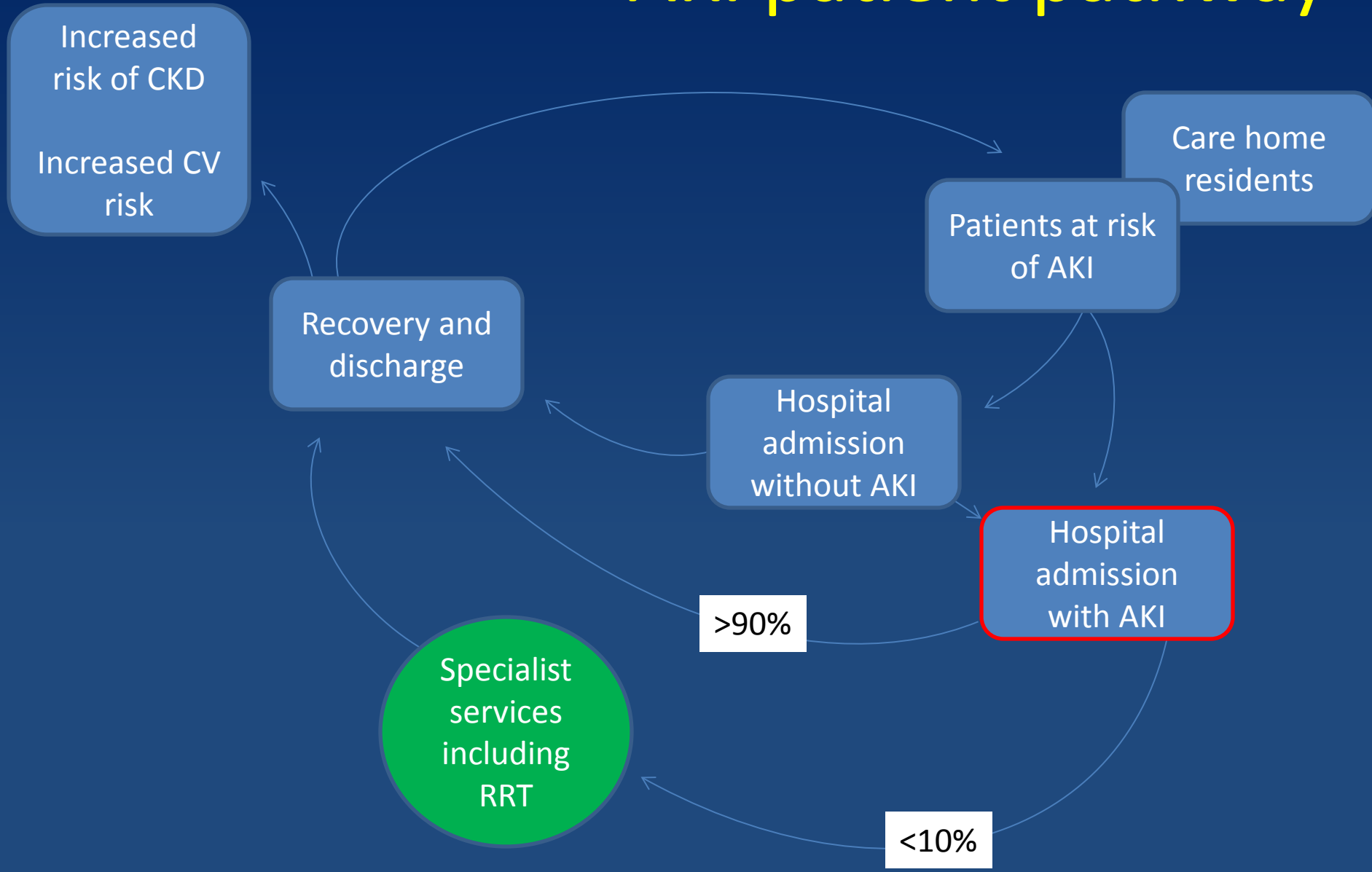
- NHS England wishes to work with Clinical Commissioning Groups (CCGs) ....

...to achieve effective commissioning of care pathways that contain responsibilities of both CCGs and NHS England specialised services...

.... ensuring the access and egress from the specialised component is seamless and effective

POC	Pathfinder	Responsible Individual
Mental Health	Forensic Pathway CRG	Mary Ann Doyle
Women and Children	Paediatric care pathways	Jacqui Kemp
Internal Medicine	Acute Kidney Injury pathway	Nesta Hawker
Cancer and Blood	Haemoglobinopathies	Jon Currington
Trauma	Back pain and sciatica	David Stockdale

# AKI patient pathway



	See Ref...	See Ref...	See Ref...	See Ref...
U/E	* 145*	140*	145*	145
Sodium	* 5.0*	4.5*	5.0*	5.0
Potassium	* 5.0*	6.0*	5.0*	4.0
Urea	↑ * 300	↑ * 253	↓ * 150	90
Creatinine		22*	41*	>60
eGFR		* 2	↑ *	1
Acute Kidney Injury				

E-alerts for AKI

Education programme

Intranet Guidelines

2<sup>o</sup> care



Care bundles

Streamlined nephrology referral

Prevention

- Education
- Medication Mx
- Sick day rules

AKI in primary care

Follow up after AKI

Recognition and management

Derby Hospitals NHS Foundation Trust

**The Derby Acute Kidney Injury Care Bundle - AUDITS**

Patient sticker

Date .....

Time .....

Ward .....

This care bundle applies to initial care of those admitted with Acute Kidney Injury (AKI)





Primary care

Secondary care

Specialist services

Primary care

AKI prevention

Improved recognition and diagnosis

Improved AKI care

Better recovery

Improved discharge and follow up



# Process



Patient/stakeholder engagement  
Clarify responsibilities: CCG vs. NHS England

- Scope care pathway and intended benefits
- Innovation: clinical/financial/commissioning
- Best practice pathway
- Proposals for development and implementation, overcome obstacles (*financial, clinical and commissioning*)
- Reporting process

# The scale of the problem

- AKI is common
- AKI is associated with considerable harm
- AKI produces significant costs
- The course and development of AKI is modifiable

