

Acute Kidney Injury in the Community

Miss Anna Barton
Royal Cornwall Hospital

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Acute Kidney Injury (AKI)

- Encompasses a wide clinical spectrum
- Identified in approx 3-20% of inpatients
 - RCH 6.5%
- Associated with
 - Increased length of stay
 - Increased mortality
 - Long term complications- CKD, dialysis
- National Confidential Enquiry into Patient Outcome and Death (NCEPOD), 2009
 - Failure of AKI identification & inadequate treatment

Royal Cornwall Hospital

- Clinical Chemistry
 - Reporting AKI identified on inpatients samples since December 2011
- Renal Team
 - AKI assessment
 - Patient pathway/Guidelines
 - Education program

AKI Identification

- LIMS- Winpath (Clinisys)
- Configured to detect all serum creatinine results that exhibited
 - a change of +/- 26 $\mu\text{mol/L}$
 - a 50% or greater change
- Sends the creatinine result to the Duty Biochemist (DB) queue

AKI Identification

- DB manually reviews & determines if AKI
 - Looks at previous creatinine results to determine baseline
 - If no previous results or none within 12 months, then uses the ULN
- Adds test code according to the AKI stage
 - 'AKI1'- comment
 - 'AKI2'- comment & telephone queue
 - 'AKI3'- comment, telephone queue & Duty Biochemist contacts renal team

'Acute Kidney Injury Network' (AKIN) criteria, 2007

- AKI Stage 1
 - Increase in creatinine of $26.4 \mu\text{mol/l}$ in 48hrs
 - Increase creatinine 1.5 to 2 fold from baseline
- AKI Stage 2
 - Increase in creatinine of >2 to 3 fold from baseline
- AKI Stage 3
 - Increase in creatinine > 3 fold from baseline
 - Acute increase of $>44 \mu\text{mol/l}$ in 24hrs from a baseline serum creatinine of $\geq 354 \mu\text{mol/l}$

What about Primary Care?

*Once you see AKI in inpatients
.....you notice it every where!*

*How much AKI is there in the
community?*

Are patients being followed up?

Method

- Winpath rules extended to include GP creatinine results (March 2012)
- DB determine if AKI & add non-reportable test code
 - AKG1, AKG2, AKG3
- Creatinine reported as per routine protocol with telephone limit >250umol/L

Method

- Downloaded AKG1/2/3 tagged samples
 - May 2012 - April 2013
 - Looked for when & where next creatinine was requested
- Cross matched against the Patient Administration System
 - May 2012 - July 2013
 - Hospital admissions
 - Deaths

Results & Discussion

Community AKI- 12 months

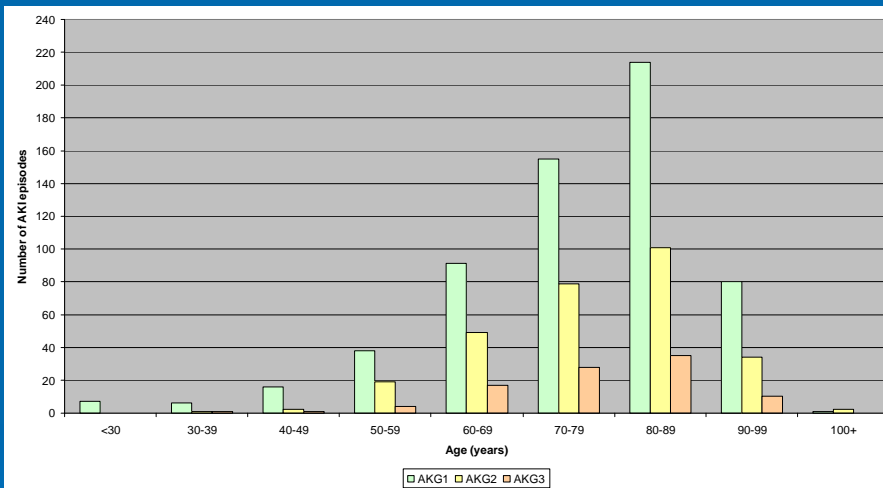
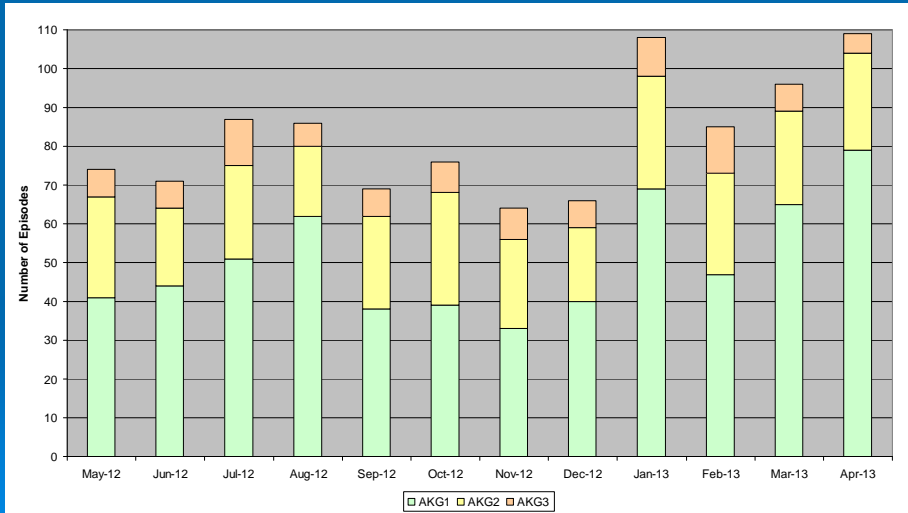
- 991 AKI episodes (970 patients)
- 0.4% of GP creatinine requests

61% AKI 1

29% AKI 2

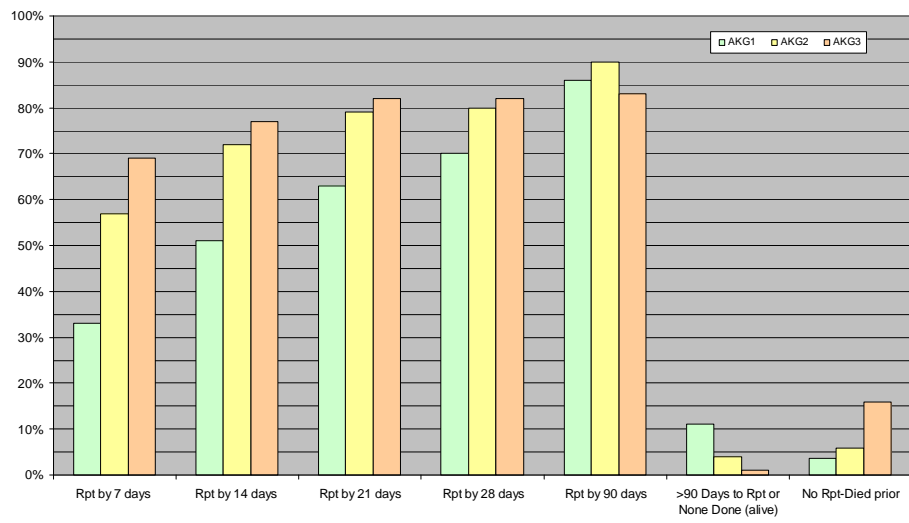
10% AKI 3

Median of 83 GP AKI tags/mth (vs 198 inpatient AKI tags/mth)



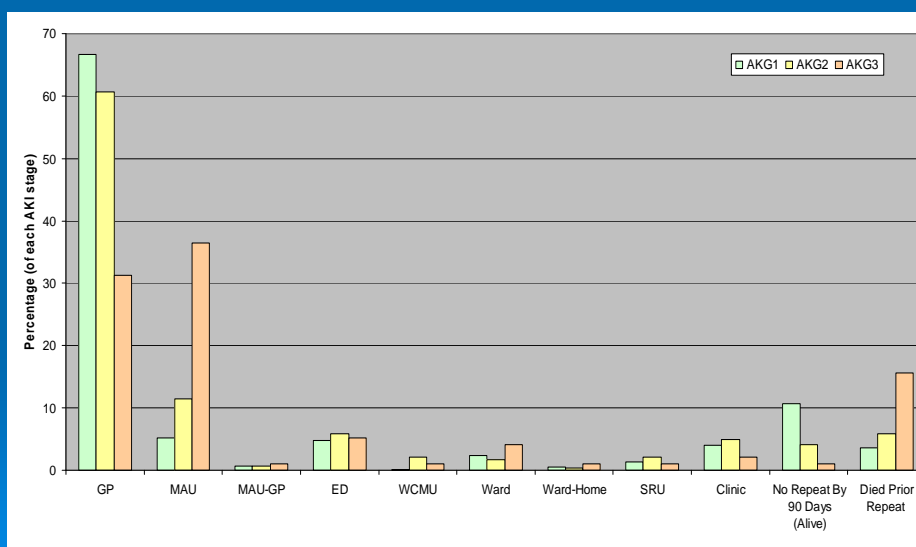
- The median age for all stages was 79 years
- Gender split: 51.8% female and 48.2% males

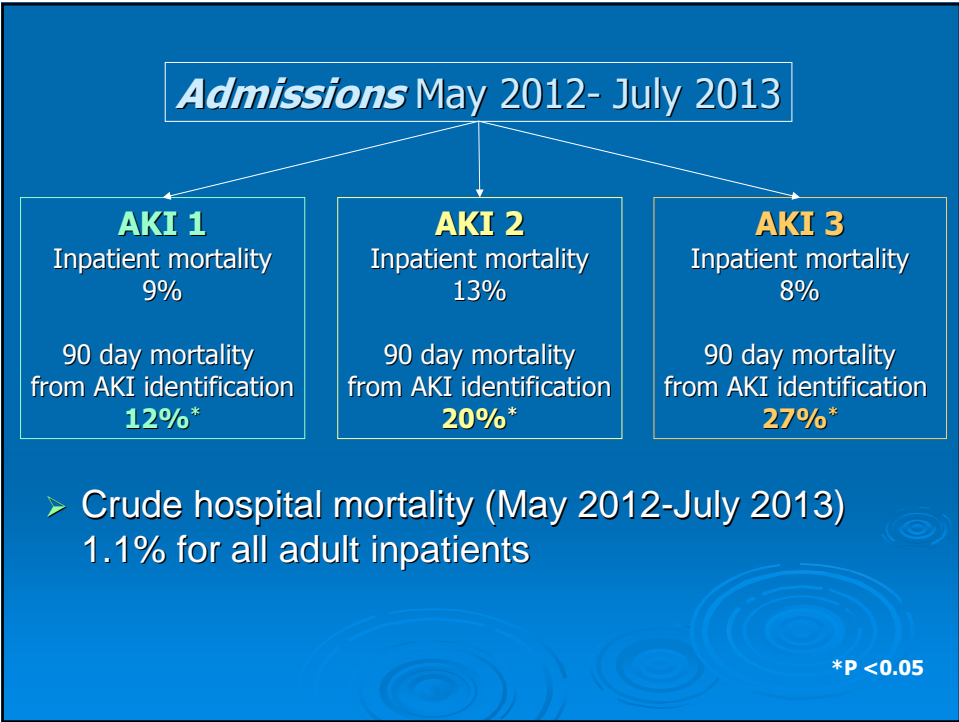
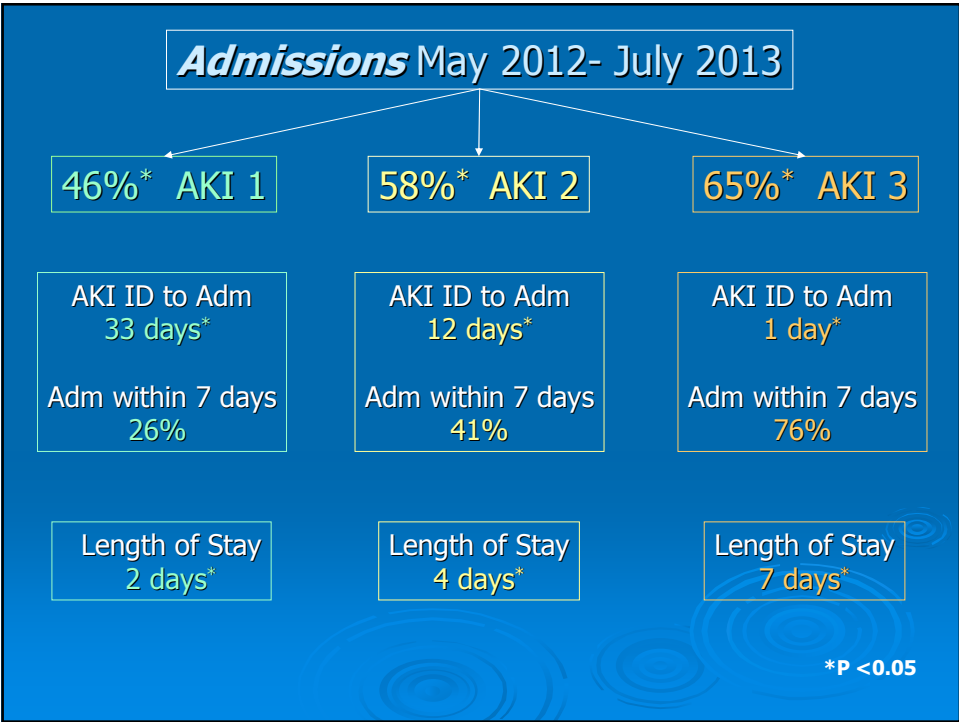
Time to follow-up creatinine request



NICE CKD guidelines recommend a repeat creatinine within 14 days when acute fall in eGFR (?CKD, ?AKI)

Location of follow-up creatinine request





Patients not admitted

(May 2012- July 2013)

AKI 1

90 day mortality
from AKI identification
11% *

AKI 2

90 day mortality
from AKI identification
21% *

AKI 3

90 day mortality
from AKI identification
65% *

- AKI 3 mortality not admitted (65%) vs. admitted (27%) ($p < 0.05$)
 - Possible reflection of critically or chronically ill patients for whom admission was not deemed best route of care.

* $P < 0.05$

Summary

- Community AKI patients
 - 83 samples per month
 - Similar demographics to 'inpatient' AKI
 - Only 51-77% of AKI patients had a repeat sample within 14 days as per NICE guidelines

Summary

- Admitted
 - Higher AKI stage = Faster admission, longer length of stay & increased mortality
 - Higher mortality vs. general hospital population
- NOT admitted
 - Higher AKI stage = Increased mortality
 - AKI 1 & 2 patients similar mortality vs admitted
 - AKI 3 patients significantly higher mortality vs admitted

The future...

- Report AKI to Primary Care
 - Started pilot & would like expand to all GPs
- Linked with education program
 - *Prevention (identify susceptible patients)*
 - *Identification*
 - *Treatment/Follow-up*
- Follow impact of GP AKI reporting

Acknowledgements

- Biochemists- Dr Angela Mallard, Dr Anthea Patterson & Dr Simon Fleming
- Renal Team- Dr Parry
- Data- Philippa Eddison & Stats- Jo Palmer

- RCH Inpatient AKI Reference:
Wallace K, Mallard AS, Stratton JD, Johnston PA, Dickinson S & Parry RG. Use of an electronic alert to identify patients with acute kidney injury. *Clinical Medicine* 2014; 14 (1): 22–6

anna.barton@rcht.cornwall.nhs