

Breakout sessions

- S1 – Measurement of improvement of AKI care in Libeskind front chaired by **Graham Gault** and **Delphine Corgié** | facilitator **Sarka Grayson**
- a. How do we measure improvement in AKI? | **Dr Fergus Caskey**, Consultant Nephrologist, North Bristol NHS T, Honorary Senior Clinical Lecturer, School of Social and Community Medicine, University of Bristol and Medical Director, UK Renal Registry
 - b. Experience of a regional improvement body | **Sam Doddridge**, AQ Focus Area Lead (AKI, AMI, HF, CABG, HFR, HK), AQuA
 - c. Best abstract nominee – Acute Kidney Injury days or time to recovery a novel sensitive metric for AKI Improvement | **Prasanna Hanumapura, Deryn Waring, Leonard Ebah**





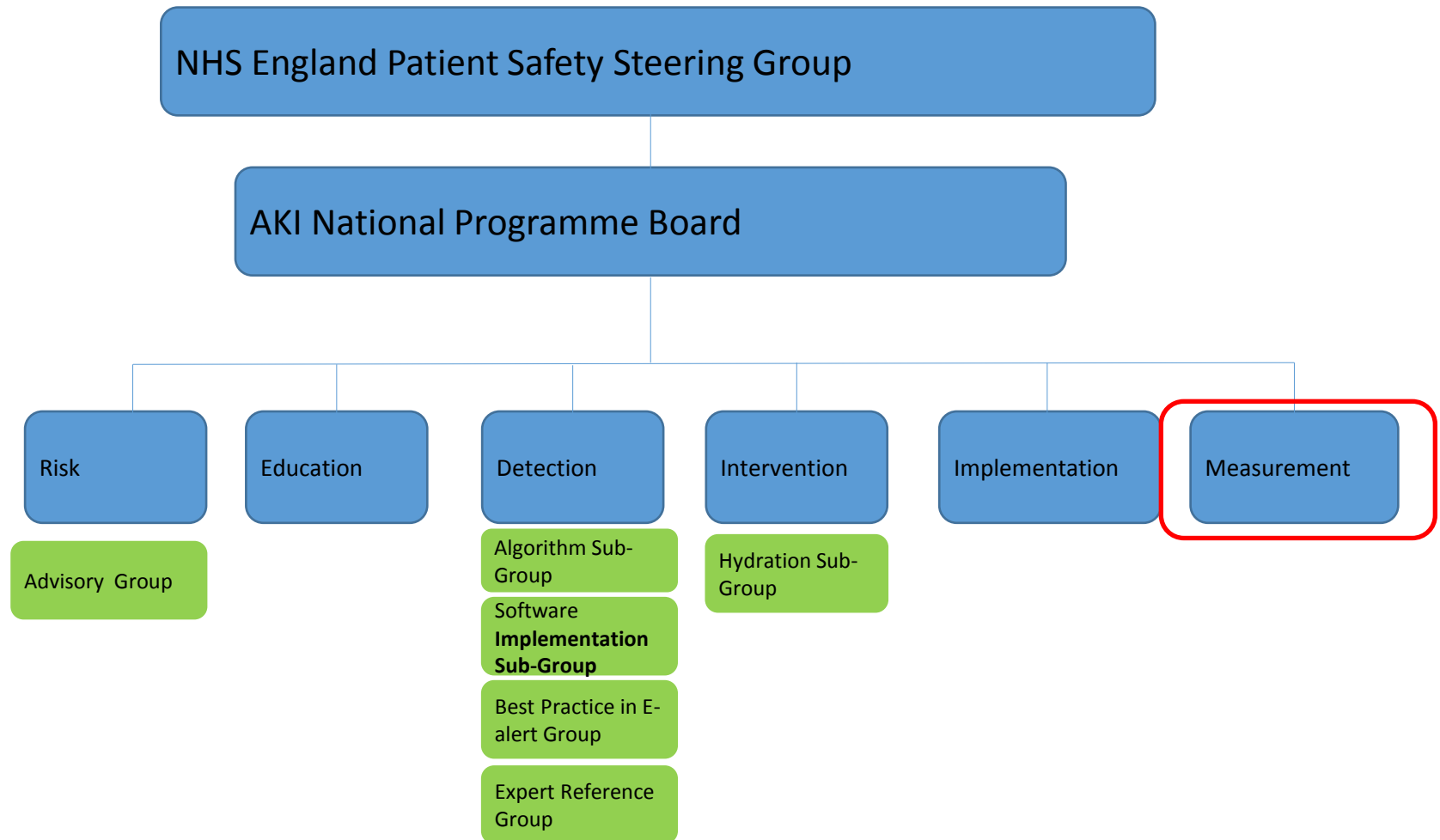
How do we measure improvement in AKI?

Dr Fergus Caskey

Medical Director of the UKRR, Bristol

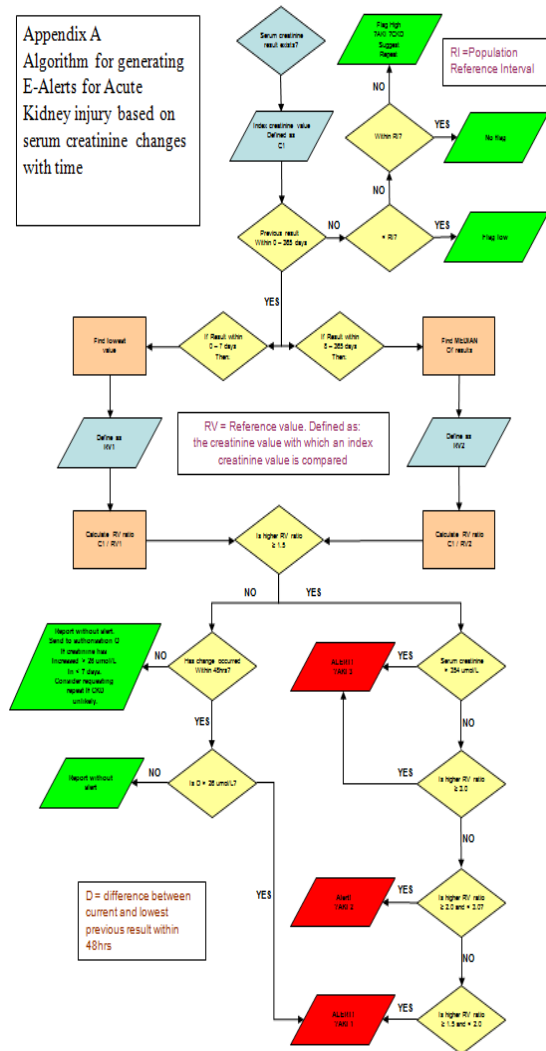
For the 2nd Conference on AKI, Manchester, November 2016

AKI National Programme



National algorithm mandate to report

Appendix A
Algorithm for generating
E-Alerts for Acute
Kidney injury based on
serum creatinine changes
with time



Patient Safety Alert

Stage Three: Directive
Standardising the early identification of Acute Kidney Injury
9 June 2014

Alert reference number: NHS/PSA/D/2014/010

Alert stage: Three - Directive

National patient safety data tells us that patients are dying and suffering severe harm due to a delay in detecting Acute Kidney Injury (AKI). AKI often occurs with other symptoms or signs and its presence frequently goes unrecognised by clinicians.

"A patient with a complex physical and mental health background presented to hospital over a weekend. Despite persistent hypotension there was no renal dysfunction. Bloods were delayed until late Sunday night, indicating a delay in diagnosis. Acute kidney injury not recognised or commented on until the following day. Medications given to the patient over the weekend included drug contraindicated in renal failure. The patient was admitted to ICU and on admission was unconscious/unresponsive. There were multiple systematic failures in the management of this patient including a life threatening delay in critical care of >12 hours and systems failure in the recognition of deteriorating patients."

Acute Kidney Injury (AKI) is a sudden reduction in kidney function. Complex long term medical conditions, medication and intercurrent illness are often complicated by AKI. It is estimated that 1 in 5 emergency admissions into hospital are associated with AKI, prolonging inpatient care and contributing to 100,000 deaths in secondary care. National Confidential Enquiry into Patient Outcome and Death (NCEPOD) estimated that one quarter to one third of cases have the potential to be prevented.

A national algorithm, standardising the definition of AKI has now been agreed. This provides the ability to ensure that a timely and consistent approach to the detection and diagnosis of patients with AKI is taken across the NHS.

This algorithm has been endorsed by NHS England and it is recommended that the algorithm be implemented across all NHS trusts.

Information from lab test results sent to the patient management system as part of the test result message. Although it is anticipated that the program will be implemented across all trusts providing further information to the patient management system as part of the test result message. The AKI algorithm is available at www.nhs.uk

Actions

Who: NHS acute trusts and foundations

By 9th March 2015

- 1 Bring this alert to the Director of Pathology/IT with responsibility for the upgrading of LIMS systems
- 2 Work with local LIMS supplier to integrate AKI algorithm into LIMS system
- 3 Work with local LIMS supplier to ensure the test result goes to local Patient management systems and into a data message sent to a central point for national monitoring

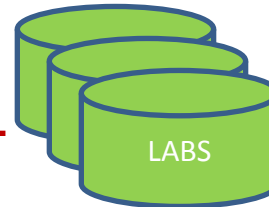
Work with local LIMS supplier to ensure the test result goes to local Patient management systems and into a data message sent to a central point for national monitoring purposes

The UKRR: AKI direct from labs

From renal IT systems
CKD4/5, D-AKI and ESRD



Renal Units



LABS

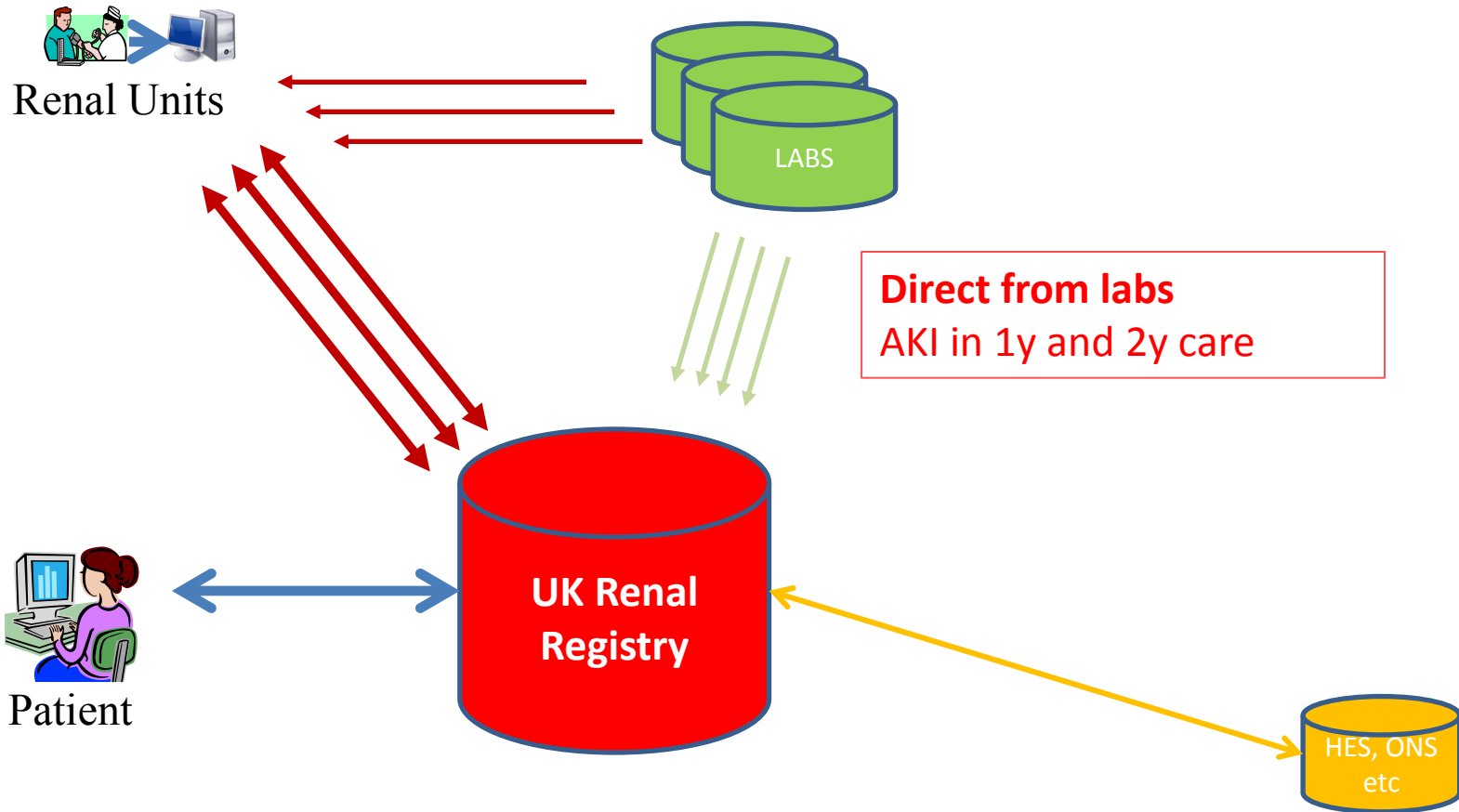
Direct from labs
AKI in 1y and 2y care



Patient

UK Renal Registry

HES, ONS
etc



AKI data specification



1. The Warning Grade Test Result

- Patient Identifiers
- The index creatinine and eGFR

“The Master Patient Index”

Linkage to:

- UKRR
- HES
- ONS
- ICNARC

2. Retrospective & Prospective Lab Data

- All creatinine & eGFR data from preceding 15 months
- All creatinine & eGFR data from next 15 months



AKI data completeness & numbers

Total number of labs: 79	~75%
Total number of alerts: 1,034,142	
Total number of patients with NHS number: 323,461	
Data Item	% Complete
NHS no	99.4
Sex	100.0
DOB	99.8
Postcode	96.9
Care Ind	96.0
AKI stage	99.9
eGFR (either CKD EPI or MDRD)	82.7
Creatinine	98.9

Up to date to
October 2016

ADULTS		
AKI stage	N	%
1	245,208	77.7
2	41,501	13.2
3	28,628	9.1
Missing	210	0.1

CHILDREN		
AKI stage	N	%
1	5,598.00	77.3
2	923.00	12.7
3	719.00	9.9
Missing	5.00	0.1

AKI: 30-day mortality

AKI cases to August 2016

Analysis was restricted to data from laboratories that sent files for AKI-alerts for most of those 8 months.

N=155,692 patients included

UK Area	Name	Total CCG pop	N pats with AKI	Deaths with AKI	% 30-day crude mortality in patients with AKI	Estimated incidence of AK
Greater Manchester	NHS Bolton	280,057	1470	329	22.4	7.9
	NHS Bury	186,527	223			**
	NHS Central Manchester	182,223	776	105	13.5	6.4
	NHS Heywood, Middleton & Rochdale	212,120	161			**
	NHS North Manchester	170,652	262			**
	NHS Oldham	227,312	152			**
	NHS Salford	239,013	1516	275	18.1	9.5
	NHS South Manchester	161,542	788	168	21.3	7.3
	NHS Stockport	285,032	2250	365	16.2	11.8
	NHS Tameside and Glossop	253,677	423			**
	NHS Trafford	230,179	1208	223	18.5	7.9
NHS Wigan Borough	319,690	1981	441	22.3	9.3	

na = no patients with AKI alert in the CCG

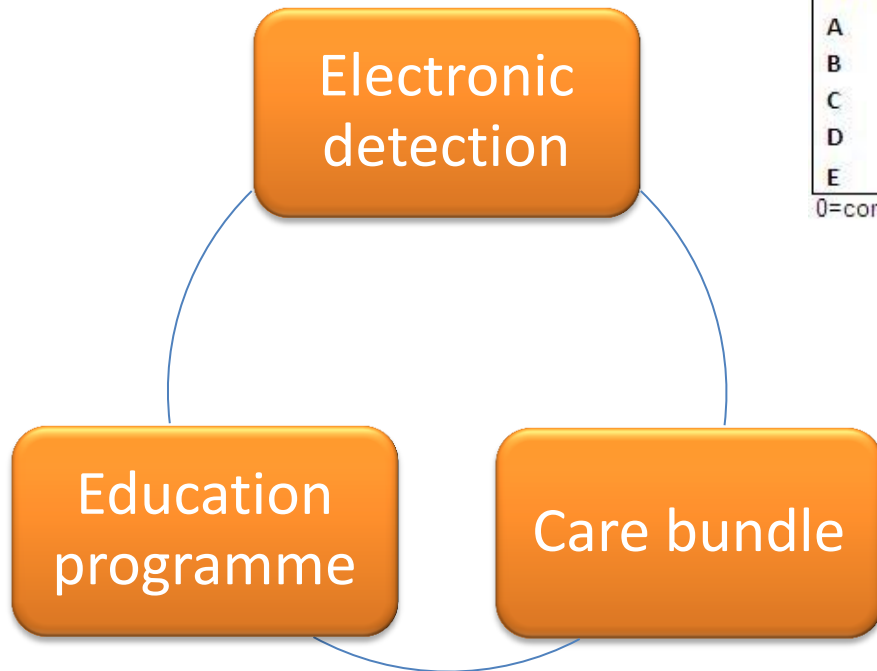
***** = blanked cells for areas with < 20 patients with AKI-alert reported

****** = blanked cells for areas where ≥ 20 AKI-patients reported but with a low estimate of incidence (< 3.5 per thousand persons per year).

Interventional Studies

Tackling AKI

Led by Dr Nick Selby, Derby
Funded by the Health Foundation



A “stepped wedge cluster randomised trial”

Block	Dec'14- Feb'15	Mar- May'15	Jun- Aug'15	Sep- Nov'15	Dec'15- Feb'16	Mar- May'16	Jun- Aug'16	Sep- Nov'16
A	0	0	T	1	1	1	1	1
B	0	0	1	T	1	1	1	1
C	0	0	1	1	T	1	1	1
D	0	0	1	1	1	T	1	1
E	0	0	1	1	1	1	T	1

0=control, T=transition, 1=exposed

Power – mortality at 30 days

Based on:

- AKI incidence of 2.5% of admissions
- 30-day mortality rate after AKI of 16%
- Power 80%, alpha 0.05, ICC between 0.01-0.2

We would be able to detect a decrease in mortality from 16% to 12.8%. (equating to around 300 fewer deaths each year for the total of the 5 units).



Next steps

- Data validation (as per analysis plan):
 - Labs
 - Detection workstream (algorithm)
- Examine the serum creatinine files (from +/- 15 months)
- Establish the linkages
 - HES and ONS
 - The UK Renal Registry
 - Intensive Care National Audit and Research Centre
- Increase coverage
 - Publish compliance with reporting
 - Publish non-compliance with reporting



 **Use for audit, quality improvement and research**



Acknowledgements

Thank you to all the healthcare professionals and patients who are participating in the Registry's National Programme on AKI. In particular the Measurement Workstream is led by Dr Nitin Kohle (nephrologist, Derby) and Dr Dan Lasserson (GP, Oxford). Lydia Perisanidou and Retha Steenkamp at the Registry are leading the statistics on this work.

Thank you to colleagues at NHS England for their support and advice in delivering this programme and in particular Dr Richard Fluck, National Clinical Director. Thank you also to all the people at the Registry who work in the background to make all this possible.

A programme in partnership with



Advancing Quality

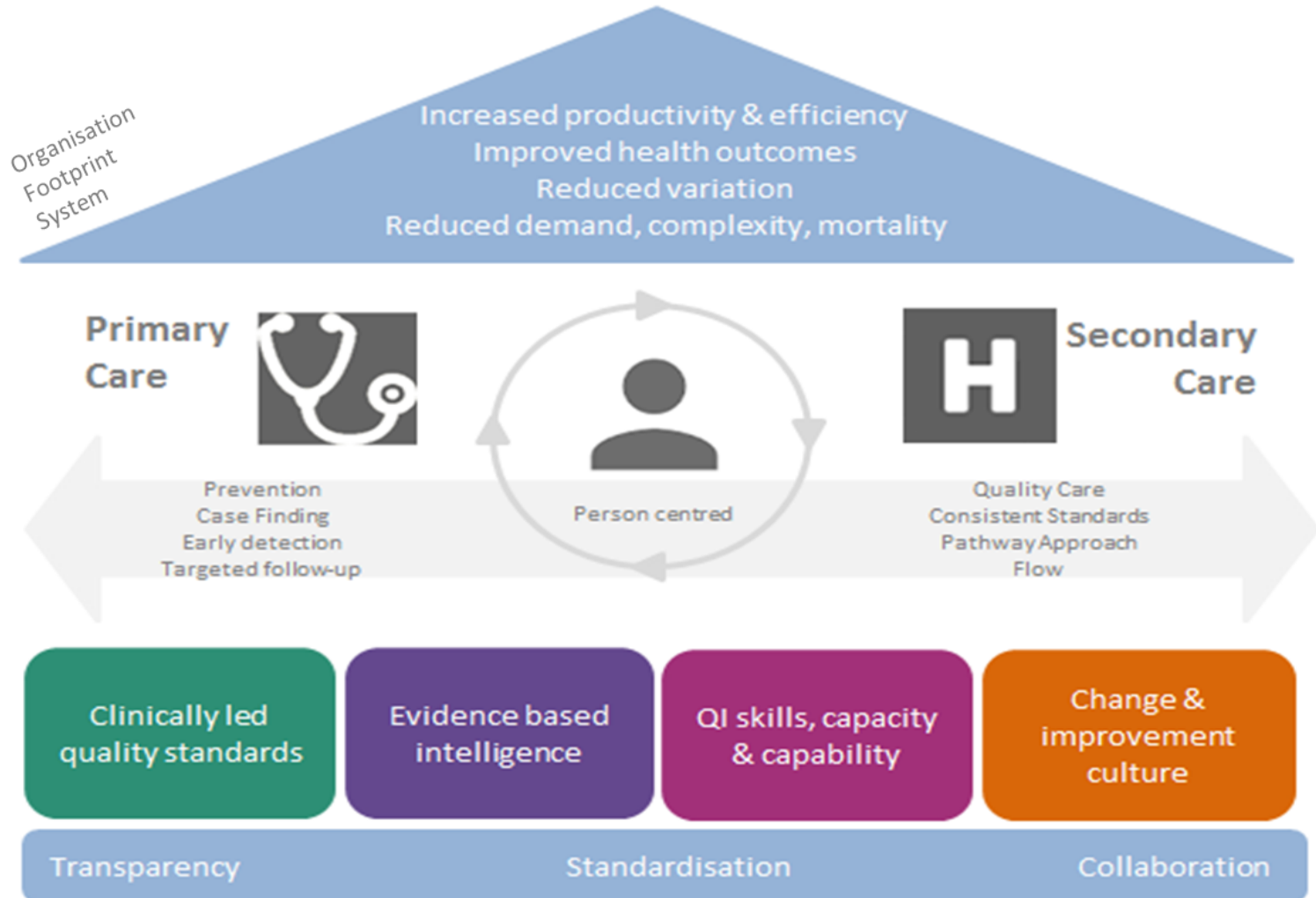
Sam Doddridge
AQ Focus Area Lead

AQUA: Reliability of Care

Patients' needs and expectations of healthcare are changing. Existing organisations and services must evolve if we are to deliver consistent, reliable care 24 hours a day, 7 days a week.

We want to support our members to achieve high standards of service, levels of access, and clinical outcomes across the whole of a patient's health and care journey.

By providing bespoke support, underpinned by evidence and data, we aim to deliver a high standard for consistent, reliable levels of care across the North West.



What is Advancing Quality?

- Focuses on clinical conditions to improve the quality of healthcare and reduce variation of healthcare, in hospitals across the North West.
- Pioneered by NHS Northwest – started in October 2008
- Highly prevalent clinical conditions
- Benchmarking, sharing of best practice, healthy competition
- Based on simple, evidence-based interventions as agreed by clinicians
- Driven in tandem by commissioners, clinicians and managers

How does Advancing Quality Work?

- Collects and reports data to calculate performance
 - Clinical process and outcome measures
- Reporting
 - Data is used by clinical and managerial teams to drive quality improvement
 - Monthly performance reports to Trusts and CCGs
 - Performance is reported publically
- Support
 - Collaborative events to share best practice
 - Web based networking site (Huddle)
- Incentives
 - Healthy competition between trusts
 - CQUIN

Clinical evidence based measures

AQ currently operates in 8 clinical focus areas:

AMI*
CABG
Heart Failure*
Hip & Knee Replacement
Pneumonia

2008

Stroke*
Dementia
Psychosis*

2010
2011

COPD

2013

Sepsis
Hip Fracture
Diabetes
Acute Kidney Injury
Alcohol Related Liver Disease

2014

Highly relevant
to the North
West population

Clinical interventions
with a strong
evidence base for
improved outcomes

Clinical consensus on
priorities

Consistent definition
of 'quality'


*transition to national data sets

Rapid Measure Development process overview

- Overall reduction in time to development for 18 to 3 months

Rapid Measure Development – 8 stages

- AQACD Agree clinical area for development
- AQACE Appoint Clinical Expert
- AQCEG Appoint Clinical Expert Group
- AQMR Measure research
 - AQMR1 Literature review
 - AQMR2 Long list of measures
 - AQMR3 Short list of measures
- AQADS Accelerated development sessions
- AQTEST Test algorithms
- AQDEV Software development
- AQIMP Implementation



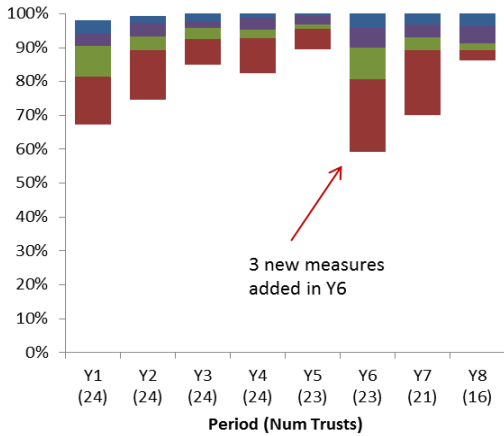
Agree:
Clinical measures
Population
methodology

Every patient measurement

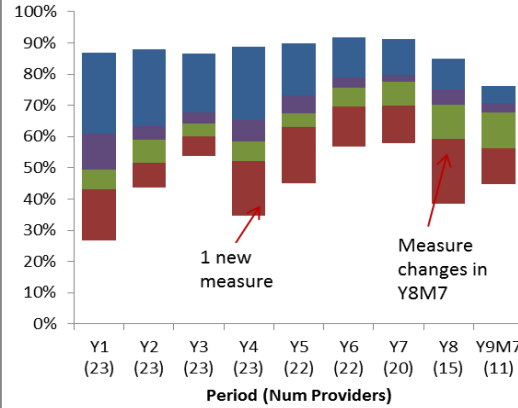
	Patient 1	Patient 2	Patient 3	Overall Trust Scores
Measure 1	✓	✓	✗	2 of 3 = 66.6%
Measure 2	✓	✓	✓	3 of 3 = 100%
Measure 3	✗	✓	✗	1 of 3 = 33.3%
Measure 4	✓	✓	✓	3 of 3 = 100%
Measure 5	✓	✓	✓	3 of 3 = 100%
Opportunities taken	4 of 5	5 of 5	3 of 5	12 of 15
Composite Process Score	80%	100%	60%	80%
Patient Appropriate Care (all or nothing)	0 of 1	1 of 1	0 of 1	1 of 3
Appropriate Care Score	✗	✓	✗	33.3%

AQ results summary ACS performance over time

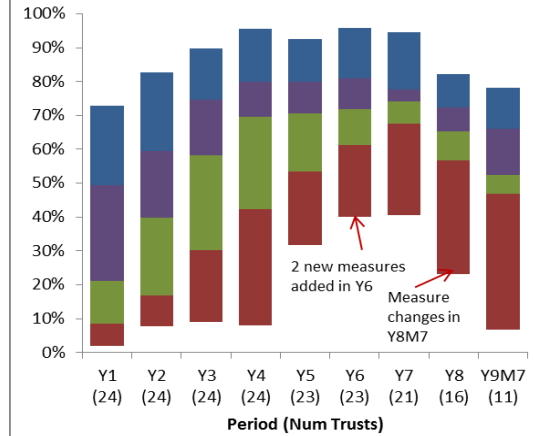
AMI ACS Compression Charts to Mar 2016



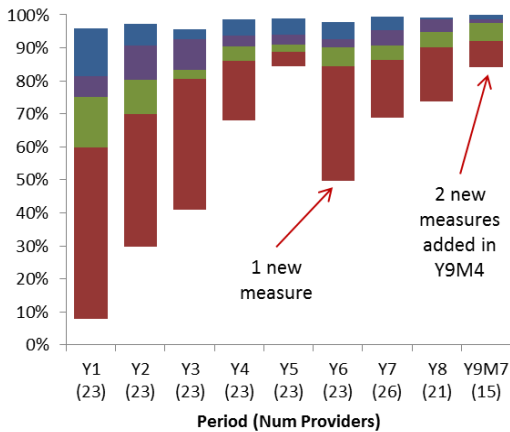
AQ Pneumonia ACS Compression Charts to Jul 2016



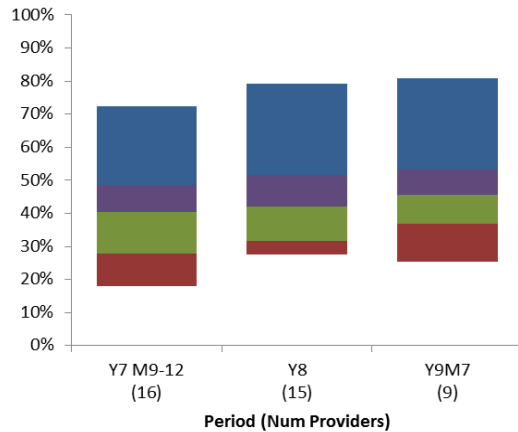
HF ACS Compression Charts to Jul 2016



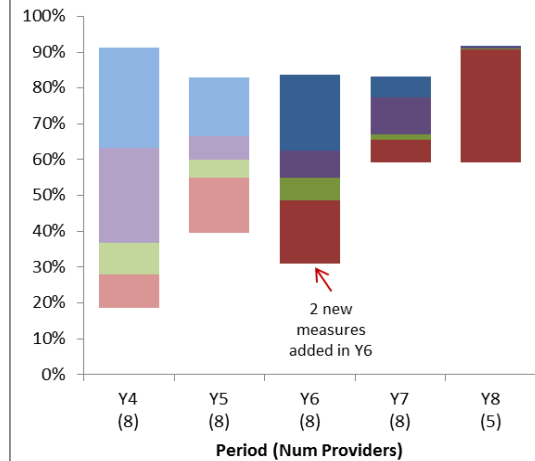
HIPKNEE ACS Compression Charts to Jul 2016



AQ Sepsis ACS Compression Charts to Jul 2016



DEM ACS Compression Charts to Mar 2016



SPECIAL ARTICLE

Reduced Mortality with Hospital Pay for Performance in England

Matt Sutton, Ph.D., Silviya Nikolova, Ph.D., Ruth Boaden, Ph.D., Helen Lester, M.D., Ruth McDonald, Ph.D., and Martin Roland, D.M.

“The introduction of pay for performance in all NHS hospitals in one region of England was associated with a clinically significant reduction in mortality.”

*“Risk adjusted, absolute mortality for the conditions included in the pay-for-performance programme decreased significantly with an absolute reduction of 1.3 percentage points and a relative reduction of 6%, equivalent to **890 fewer deaths during the 18-month period.**”*

Cost effective

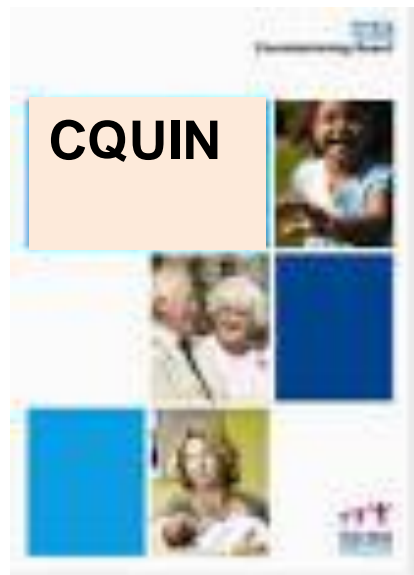
- 5,227 QALYs gained
- £105 million estimated health gains (8 fold return on investment)
- Length of stay reduced by 22,802 bed days (£4.4 million)



Clinical Quality and Financial Performance are Inseparable

“In my job my incentive is to ensure that all my patients get first class treatment, and that every patient gets the right treatment every time”

- Dr Paul Stockton, Respiratory Consultant



Culture of change & collaboration

Face to face



Bespoke support

Virtual

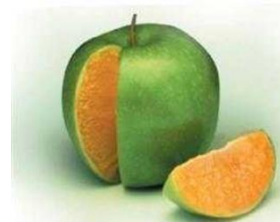


huddle™
Webinars



Acute Kidney Injury Measure Set

- Derived from an evidence base
 - NICE guidelines or latest research
- Clinically agreed via discussions with clinical experts
 - Clinical lead (makes ultimate decision on measures)
 - CEG (ensures varied discussion from all areas involved)
- Three formats for measures
 - Process, Outcome and Data Collection
- Presented in a set format via a data dictionary which indicates measure parameters
 - Identified population
(Based on discharge information and agreed criteria)
 - Individual measure exclusions
 - Measure questions



Measure Set Goals

- What do we want to achieve from the measure set?
- Improvement in care and outcomes for patients
 - Reduced Length of stay
 - Reduced mortality
 - Reduced readmissions to hospital
- Standardise care across the North West
- Collaborative learning
- Driver for change

AKI Participation & population

- National algorithm to identify creatinine rise of AKI stage 3
- Use of pathology data rather than coding
 - Lack of documentation in notes therefore AKI not coded
- Transfer of pathology data securely
 - Sent in-line with PbR time frames
 - Transfer of all AKI patients regardless of stage
 - Use for AKI stage progression analysis
- Match patient to a PbR inpatient stay
 - Male and female aged ≥ 18 on admission
 - Analysis on readmissions, length of stay, in-hospital mortality
 - Unmatched patients will not be loaded

- Data collection only for first quarter of release
 - April to June 2015 discharges
- 50% ACS target
 - July 2015 discharges onwards
- Data Assurance Targets
 - 95% coding completeness
 - 95% data completeness
- Collaboratives
 - December 2014 - introduction to AQ AKI
 - 21st October 2015 – first formal data share for AKI
 - 13th June 2016 – measure progress and outcome data

Acute Kidney Injury (AKI): Key Facts



What is needed is **recognition of risk** and a prompt **blood test**

Around 100,000 deaths in secondary care are associated with AKI and $\frac{1}{4}$ to $\frac{1}{3}$ have the potential to be prevented

Frail older patients are most at risk of AKI



AKI is **100 times more deadly** than an **MRSA infection**

1 in 5 of all emergency admissions into hospital are associated with **AKI**



Preventing 30% of AKI cases could save the **NHS** **£130-£186m** per year



Incidence 172 per million population per year ..and increasing



Early identification is key



Clinical Process Measures

- AKI-01 Urine Dipstick Test within 24 hours of 1st AKI Alert
- AKI-02 Stop Angiotensin Converting Enzyme (ACE) inhibitors and Angiotensin Receptor Blockers (ARBs) within 24 hours of 1st AKI Alert
- AKI-03 Serum Creatinine test repeated within 24 hours of the 1st AKI Alert
- AKI-04 Ultrasound Scan of urinary tract within 24 hours of 1st AKI Alert
- AKI-05 Specialist Renal/Critical Care Discussion within 12 Hours of 1st AKI 3 Alert
- AKI-06 Give patients written self-management information prior to discharge

Data Collection measure

- AKI-07 Pharmacist Medication Review within 24 hours of 1st AKI alert

Outcome Measures

- **Mortality**

Inpatient mortality of AKI varies considerably depending on severity and setting (whether the patient is cared for on and Intensive Care Unit or not)

- **Length of stay (LOS)**

Early recognition and treatment of AKI has been associated with reduced length of stay. Patients with AKI 3 stay on average 4.7 days longer in hospital than patients who do not have AKI

- **Readmissions**

Effective discharge planning and self management advice issued to patients/carers can reduce hospital readmissions

- **AKI stage progression**

The monitoring of the progression of the disease will allow clinicians to ascertain the effectiveness of care delivery

- 12 months just over 5,000 patients eligible for the AQ measures
- 16.8% of patients receiving all eligible measures
- Mean length of stay 5 days shorter for those achieving ACS
- Potential saving of over 21,000 bed days if remaining 83.2% of patients (n 4,201) achieved ACS and this reduced LoS

			Avg Bed Days
AQ AKI	Count	Bed Days	
Passed	851	12,662	14.9
Failed	4,201	83,684	19.9
Total	5,052	96,346	19.1

4201 * (19.9-14.9) = 21,177 bed days saved

Thank You

Any questions?



Questions?

