

Innovation and Impact

Tuesday 16 May 2017

Oxford University Hospitals

South Central Ambulance Service

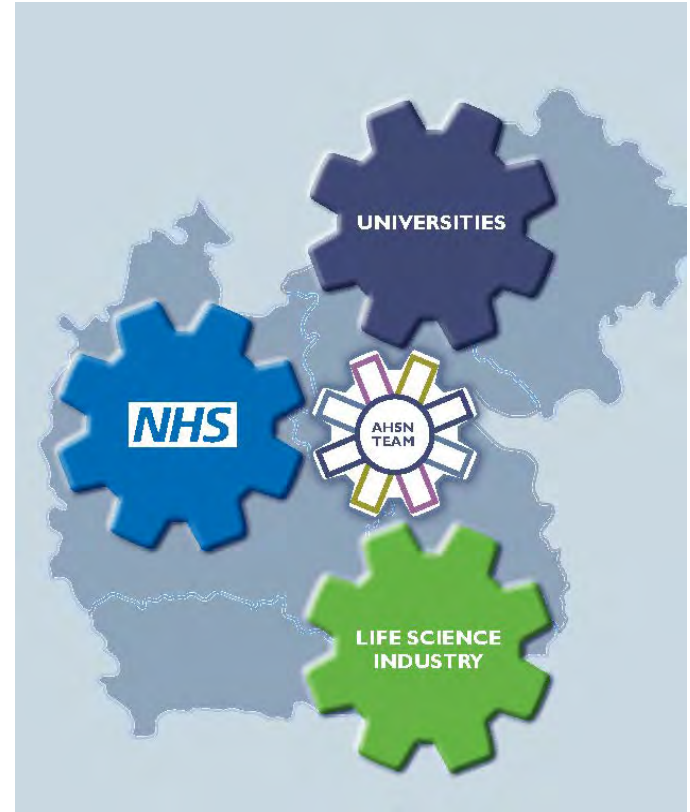
Agenda

Time	Presenter (s)	Topic
16.00	Dr Paul Durrands, Chief Operating Officer, Oxford AHSN	Innovation and Impact
16.15	Dr Clare Dollery, Deputy Medical Director, Oxford University Hospitals NHS FT Dr Andrew Brent, Sepsis clinical lead and Consultant in Infectious Diseases	Patient Safety and Sepsis in the acute sector
	Mark Ainsworth-Smith, Consultant Pre-Hospital Care Practitioner, South Central Ambulance Service FT Trust	Sepsis recognition in the Ambulance service
16.55	Dr Kassim Javaid, Consultant Rheumatologist and the team, Oxford University Hospitals	Fractures Liaison Service – impact and value (presentation to follow)
17.15	Professor Simon Travis, Consultant Gastroenterologist, Oxford University Hospitals	ICHOM and Inflammatory Bowel Disease PROMs
17.35	Professor Ian Pavord, Professor of Respiratory Medicine, University of Oxford	The Precision medicine approach to the diagnosis of Asthma
17.50		Closing remarks, networking and light refreshments

Innovation and Impact

Dr Paul Durrands
Chief Operating Officer, Oxford
AHSN

- 7 programmes and themes
- 100+ collaborative projects
- 50+ innovations
- 30+ industry partnerships
- 3 million people
- 11 NHS Trusts
- 65,000 NHS staff
- 9 universities
- 3 STPs and 3 accountable care organisations
- 750 life science companies
- 1 information governance framework – all 12 trusts signed up
- 2,020 newsletter subscribers and 2,925 Twitter followers



ComRes independent stakeholder survey

- 563 respondents to survey (26% of those contacted) – more than 50% from NHS frontline
- 80% said network building culture of collaboration and partnership
- 64% said network adds value to their work
- *“They’re listening, identifying challenges and trying to help us solve problems”* NHS provider
- *“Without the likes of the AHSN small companies would really, really struggle to get any traction with the NHS”*

You can read the full report here: <http://bit.ly/OxfordAHSNsurvey>

Highlight Workforce Health and wellbeing



“Physical activity reaches the very foundation of illness and helps prevent 23 diseases including depression, diabetes and dementia. An active workforce results in 27% fewer days lost to sickness with productivity increasing by up to 15%”
Dr William Bird, Intelligent Health

“No effort is too small. Start wherever you can and keep going”

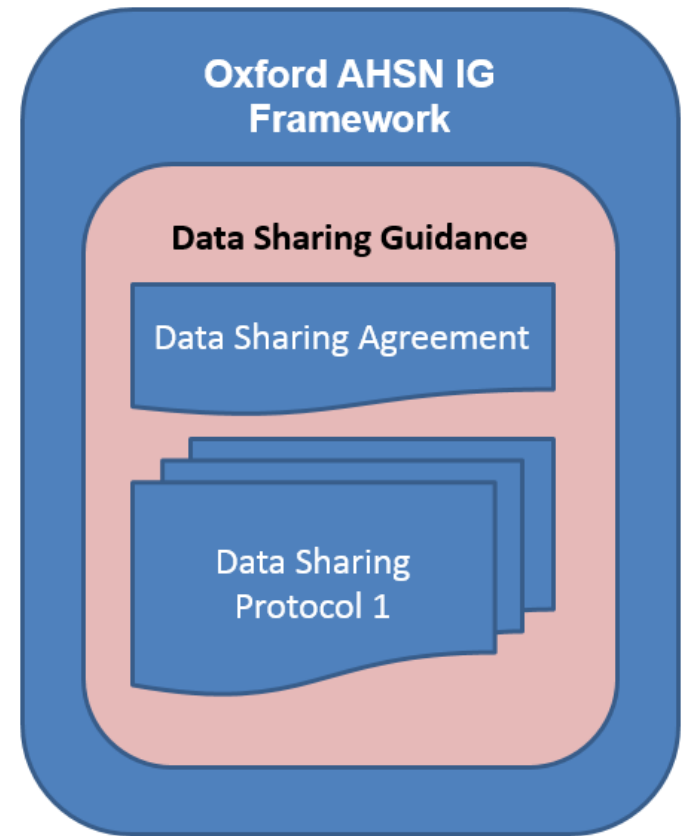
Highlight Clinical networks



“The Thames Valley Neonatal Network is delighted to see that there has been a dramatic reduction in preterm babies being born outside a tertiary centre. This is a major achievement in a short space of time and the whole network is to be congratulated on all the hard work and co-operation that has gone into making this project a success.”

Dr Eleri Adams, Vice Chair, National Neonatal Clinical Reference Group; Clinical Lead, Thames Valley Neonatal Network

Highlight Data sharing across the region



“The Oxford AHSN team has created an exemplar for information-sharing between partner organisations”

Dr Chris Bunch, Oxford University Hospitals Caldicott
Guardian

Wide range of clinical areas and technologies examples

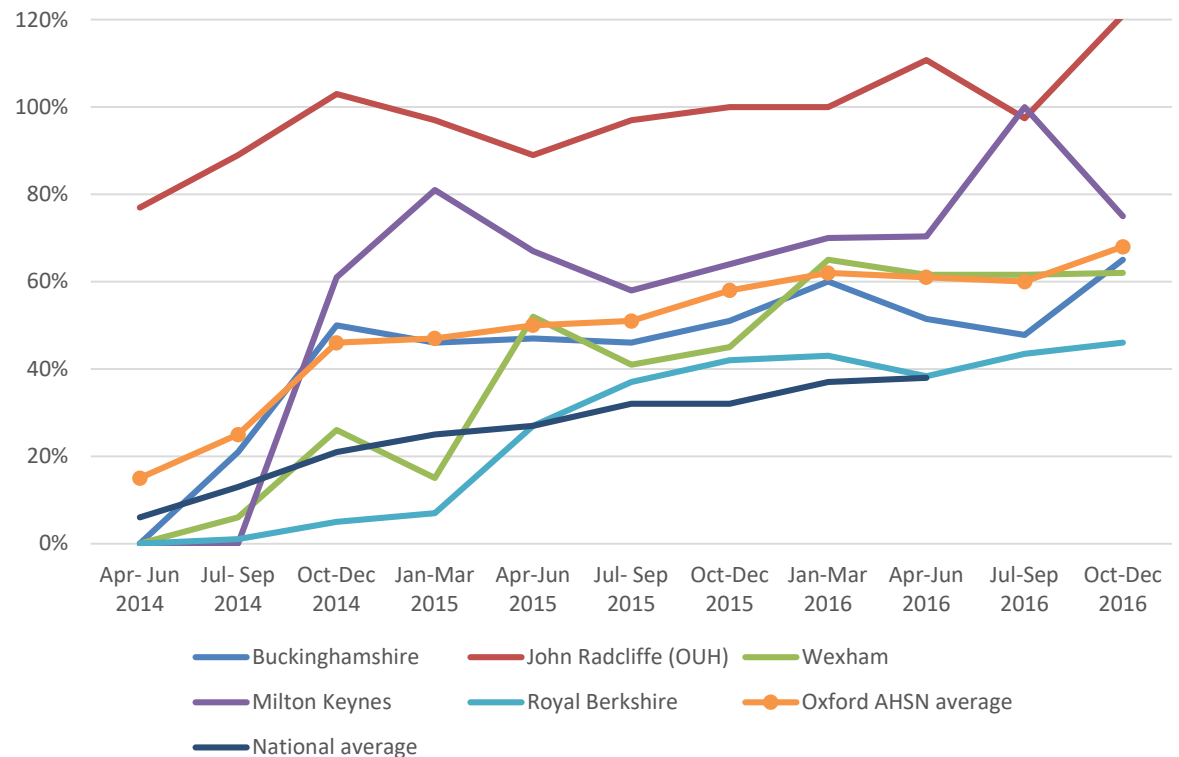
Clinical Area	Medicines	Medical Devices	Digital Health	Diagnostics
Stroke	<ul style="list-style-type: none"> NOACs 	<ul style="list-style-type: none"> Intermittent Pneumatics Compression Sleeves 		<ul style="list-style-type: none"> Point of care
Diabetes			<ul style="list-style-type: none"> Gestational Diabetes Monitoring 	
Sepsis				<ul style="list-style-type: none"> Curetis Unyvero™ system
Safety		<ul style="list-style-type: none"> Pneux Wiresafe Non-injectable connectors 	<ul style="list-style-type: none"> Intelligent Ultrasound 	
Respiratory				<ul style="list-style-type: none"> Circassia NIOX® FeNo Point of Care (PoC)
Patient mobility		<ul style="list-style-type: none"> Gyroset 		
Ambulatory care			<ul style="list-style-type: none"> ISanSys patient monitoring 	
Prevention				<ul style="list-style-type: none"> Somascan

Adoption example

Intermittent Pneumatic Compression Sleeves

% IPC Sleeve utilisation in the immobile patient cohort

- AHSN approach has significantly increased IPC sleeve utilisation rates compared to the rest of the country.
- Over 16/17 performance across the region remained steady, increasing to an average of 68% for Oct-Dec 2016
- OHE independent study found that driving adoption beyond national average prevented an additional 22 DVTs, 2 PEs and 12 deaths over first 18 months of project
- Assuming utilisation maintained by end of AHSN licence, 2500 patients across the region will have received IPC sleeves. This represents the potential for 125 fewer DVTs, 75 fewer deaths and 13 fewer PEs over the lifetime of the project.



Examples of innovation – latest projects to improve patient safety

- Read more in our Patient Safety annual report – copies available here today

Non-injectable arterial connector



This improves safety for all patients requiring an arterial line in operating theatres and intensive care by preventing drug administration via the wrong route, bacterial contamination of the arterial line and blood spillages.

WireSafe



This is an engineered solution to prevent retention of the central line guidewires that are used when inserting large catheters into central veins.

PneuX System



A cuffed ventilation tube and an electronic cuff monitoring and inflating device that prevents leakage of bacteria-laden oral and stomach contents to the lung.

Impact



47,000

Patients recovered
or avoided harm



200

Lives saved



£31m

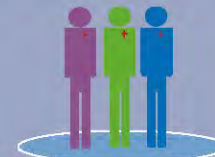
New investment and savings
brought into the economy



Return = **2.5** times the
cost of the Oxford AHSN



100s
of projects



2,500

networked clinicians



300+

innovations assessed



33

innovations implemented across
medicines, devices, digital and diagnostics



2,500

people attended events organised
by or sponsored by Oxford AHSN

Sector	Indication	Product	Setting
Diagnostics	Range of markers	iStat (PoC)	Out of Hours
Diagnostics	Infection	FBC, CRP Microsemi	Acute
Diagnostics	Cardiovascular	SomaScan CV	Primary
Diagnostics	Stroke	PoC	Ambulance
Diagnostics	IBD	Calprotectin	Acute
Diagnostics	Pre-eclampsia	Elecsys	Acute
Diagnostics	Asthma/COPD	NIOX FeNo	Primary
Digital	Oncology	Digital stratification tool	Primary/Acute
Digital	Digital audit	Ultrasound	Secondary
Digital	Vital signs	Patient Status Engine	Ambulatory
Medtech	Wheelchair control	Gyroset for quadraplegics	Rehab/Home

Examples of Diagnostic Projects

In Progress



- Extension from using point of care diagnostics in the EMUs to Out of Hours GP vehicles for use in the community sponsored by a health foundation grant
- Study will assess the benefits of PoC in an Out of Hours setting using Abbott iStat



- Evaluation of Horiba Microsemi^{CRP*} in Oxford University Hospitals NHS FT, Stoke Mandeville Hospital and Wexham Park
- Testing of a CRP and whole blood assay in emergency departments to better diagnose those children with severe infection and to reduce unnecessary admissions

In Planning



- Assessment of proteomic profiles using SOMAScan[®] of NHS Health Check participants in collaboration with GP practices in Bucks
- Develop a model of risk across the study population that assesses the impact of pharmacological and lifestyle interventions



- Offers a single protocol for sample preparation with potential to assess a 100 analytes within a few hours in a PoC setting
- Assessment of Unyvero system in infectious diseases in Oxford University Hospitals NHS FT and Royal Berkshire Hospital about to start

Evaluation example

Fractional Exhaled Nitric Oxide testing in Primary Care

- FeNO testing allows GPs to determine whether a patient's asthma is “inflammatory” and likely to respond to inhaled corticosteroids
- AHSN are working with Circassia and University of Oxford to drive adoption of FeNO diagnostic devices across the region
- Currently working with a number of evaluative practices to generate real world evidence of cost savings to CCGS



Introducing the
NIOX VERO[®]

**FeNO TESTING NOW
QUICK AND EASY**



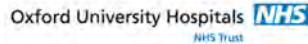
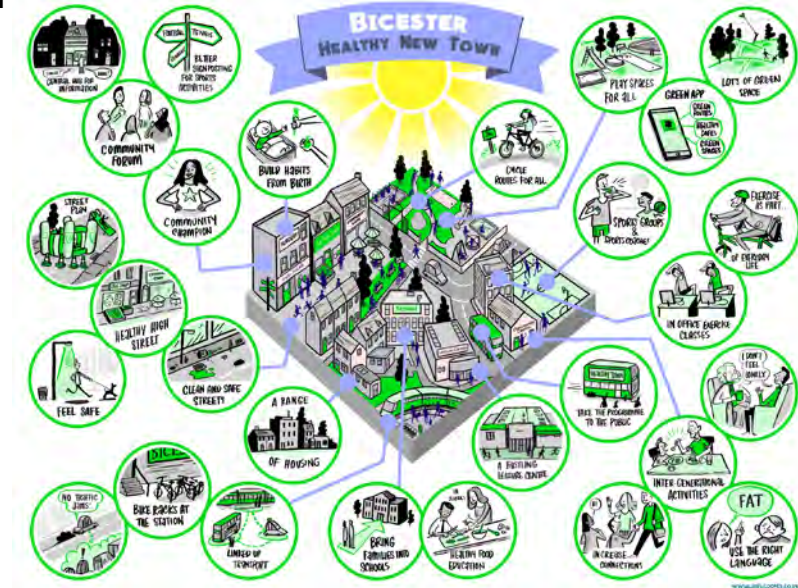
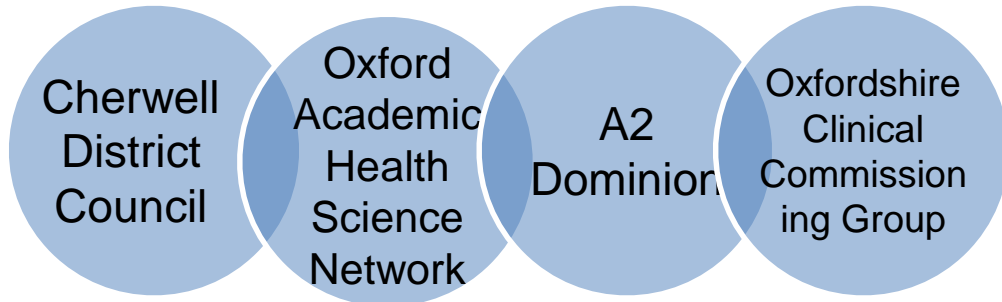
Examples of projects you are leading/involved with:

Programme	Example
Best Care	Maternity clinical network – pre-term babies, SGA , reducing never events
Clinical Innovation Adoption	GDM-Health adoption across region CAUTI (bladder scanners) Early Inflammatory Arthritis (biosimilars)
Industry Partnerships	TheHill established for innovation in digital health Horiba – paediatric sepsis diagnostic SEND – support on commercialisation Abbott – iSTAT point of care diagnostic panel for geriatric patients Drayson Technologies, Oxford University and OUH have signed agreements to collaborate on the development, testing and future commercialisation of GDM-Health
Patient Safety	Sepsis (with SCAS) AKI

Bicester Healthy New Town Partnership



- 1st wave 393 new homes
- 6,500 homes NW Bicester development
- Obesity & social isolation



North Oxfordshire Community Partnership Network



Bicester Locality Patient Forum,

Future

- Innovations need to get into the NHS more quickly and cheaply
- The AAR identified AHSNs as playing a key role in identifying and adopting new transformative products
- Oxford AHSN focus on Innovation Adoption, Industry Partnerships and Patient Safety
- Innovation – medicines, medical devices, digital technology and diagnostics
- Different challenges to adoption even for innovation with strong case for adoption – eg need for pathway changes, funding changes, affordability, clinical leadership capacity



Accelerated Access Review: Final Report

Review of innovative medicines and medical
technologies

An independently chaired report, supported by the Wellcome Trust





Oxford
Academic Health
Science Network



Innovation and Impact Patient Safety Collaborative

Sepsis Programme

OUH Roadshow 16th May 2017

Clare Dollery, Stakeholder Group Chair



AHSN Mission

- Bringing together universities, industry and the NHS to improve the health and prosperity in our region through rapid clinical innovation adoption.

AHSN Aims

- Focus on the needs of patients and local populations support and work in partnership with commissioners and public health bodies
- Speed up adoption of innovation into practice to improve clinical outcomes and patient experience
- Build a culture of partnership and collaboration – promote inclusivity.
- Create wealth



Patient Safety Alert



The NEW ENGLAND JOURNAL of MEDICINE

Goal-Directed Resuscitation for Patients with Early Septic Shock

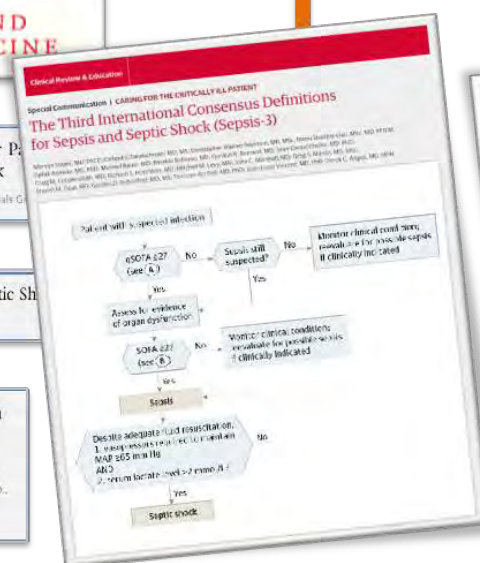
The ARISE Investigators and the ANZICS Clinical Trials Group

A Randomized Trial of Protocol-Based Care for Early Septic Shock

The PROCESS Investigators*

Trial of Early, Goal-Directed Resuscitation for Septic Shock

Paul R. Mouncey, M.Sc., Tiffany M. Osborn, M.D., G. Sarah Power, M.Sc., David A. Harrison, Ph.D., M. Zia Salique, Ph.D., Richard D. Gray, Ph.D., Razi Jahan, B.A., Sheila E. Harvey, Ph.D., Derek Bell, M.D., Julian F. Blon, M.D., Timothy J. Coats, M.D., Mervyn Singer, M.D., J. Duncan Young, D.M., and Kathryn M. Rowan, Ph.D., for the ProMISE Trial Investigators*



Patient Safety Alert

Check your sepsis awareness to improve the survival of patients with sepsis



Sepsis

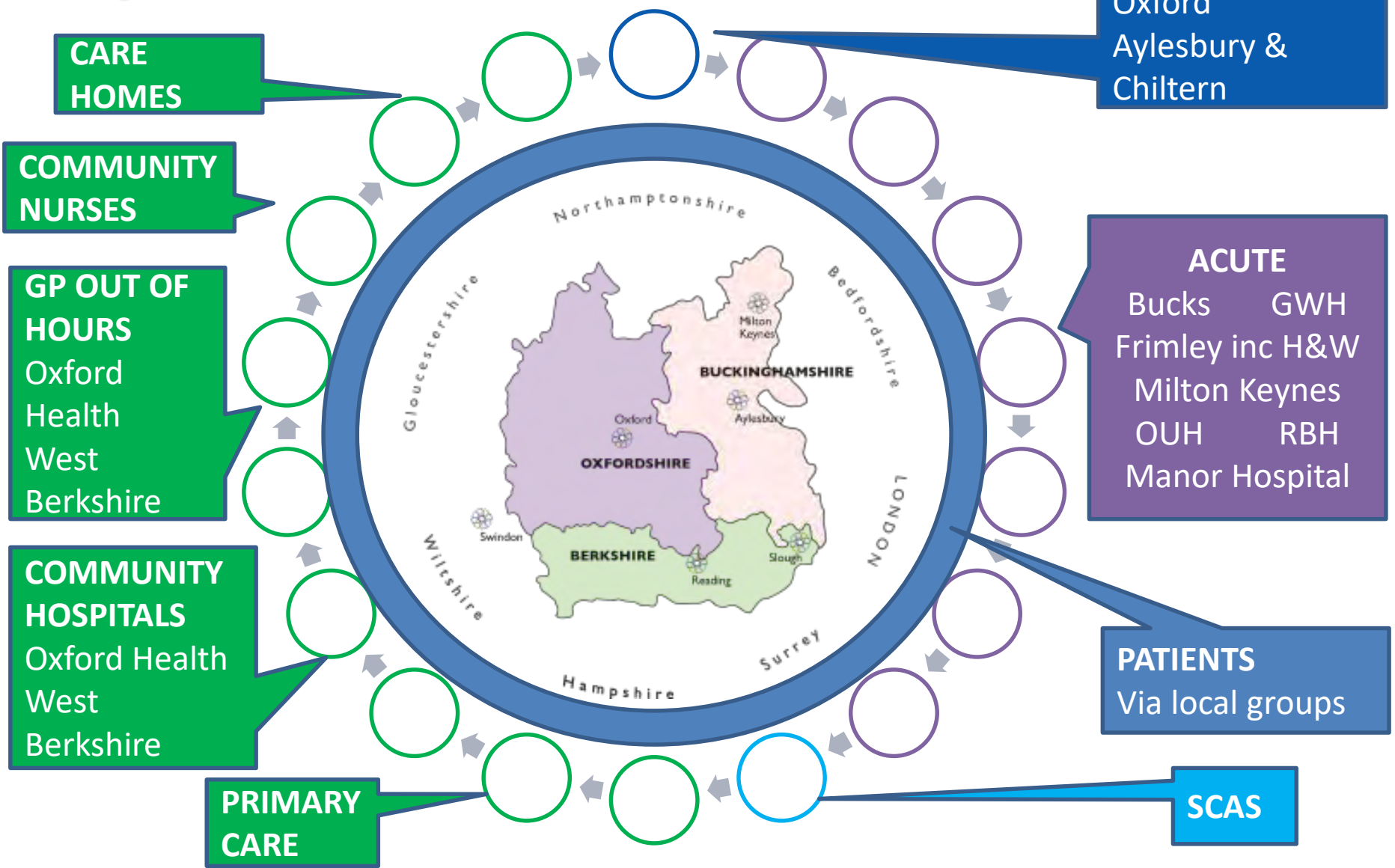
NICE quality standard

Draft for consultation

AHSN Aims

- Focus on the needs of patients and local populations support and work in partnership with commissioners and public health bodies
- Speed up adoption of innovation into practice to improve clinical outcomes and patient experience
- Build a culture of partnership and collaboration – promote inclusivity.
- Create wealth

Sepsis Stakeholders



Sepsis Programme Focus

- This programme focuses on standardising sepsis management across the whole care pathway throughout the Oxford AHSN region

Aims:

- to help organisations improve their outcomes with septic patients,
- to share best practice in sepsis management, measurement, education and improvement,
- to standardise sepsis management across the whole care pathway
- to share outcomes performance

Oxford AHSN Sepsis Group Aims

- **Share experience** of QI initiatives
- **Share resources** (e.g. for training)
- **Share data** (process & outcome; combine to max learning)
- **Collaboratively review & apply guidelines**
- **Joint QI projects** (\pm research)



Patient Safety Collaborative Sepsis Programme

OUH Roadshow 16th May 2017

Andrew Brent, Sepsis Clinical Lead



Geoff's Story



- Patient story: 8 min film
- OUH intranet
- Oxford AHSN PSC website
- >1000 views
- Health Education England

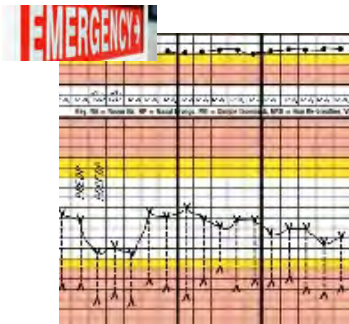
Oxford AHSN Approach



- Regional approach to implementation

- Integrate into existing pathways

- Community
- Acute admissions
- Deteriorating patients (Track & Trigger / Early Warning Scores)



- Build on progress already made

- 'Red Flag' Sepsis
- Sepsis Six
- Neutropaenic Sepsis



Oxford AHSN Regional pathway

Stratify risk of severe illness and death from sepsis using the risk criteria in the stratification tool for adults, children and young people aged 12 years and over

- | | | |
|---|---|--|
| <p>High risk criteria</p> <ul style="list-style-type: none"> Objective evidence of new altered mental state Respiratory rate: 25 breaths per minute or more OR new need for oxygen (more than 40% FIO2) to maintain saturation more than 92% (or more than 88% in known chronic obstructive pulmonary disease) Heart rate: 130 beats per minute or above Systolic blood pressure 90 mmHg or above or systolic blood pressure more than 40 mmHg below normal Not passed urine in previous 18 hours, or for catheterised patients passed less than 0.5 ml/kg of urine per hour Mottled or ashen appearance | <p>Moderate to high risk criteria</p> <ul style="list-style-type: none"> History from patient, friend or relative of new onset of altered behaviour or mental state History of acute deterioration of functional ability Impaired immune system (illness or drugs including oral steroids) Trauma, surgery or invasive procedures in the last 6 weeks Respiratory rate: 21-24 breaths per minute Heart rate: 91-130 beats per minute (for pregnant women 100-130 beats per minute) OR new onset arrhythmia Systolic blood pressure 91-100 mmHg Not passed urine in the past 12-18 hours, or for catheterised patients passed 0.5-1 ml/kg of urine per hour Temperature less than 36°C Potential infection, including redness, swelling or pain at surgical site or wound | <p>Low risk criteria</p> <p>Suspected sepsis, but:</p> <ul style="list-style-type: none"> Normal behaviour No high risk or moderate to high risk criteria met |
|---|---|--|

Give i.v. fluid (500 ml over less than 15 minutes) without delay

Refer to critical care

Carry out observations, at least every 30 minutes or continuous monitoring in ED. Consultant to attend if not already present if patient does not improve

Review by a senior decision maker within 3 hours for consideration of antibiotics.

* See Acute kidney injury (NICE guideline CG169)

Buckinghamshire Healthcare NHS Trust

Royal Berkshire NHS Foundation Trust

Great Western Hospitals NHS Foundation Trust

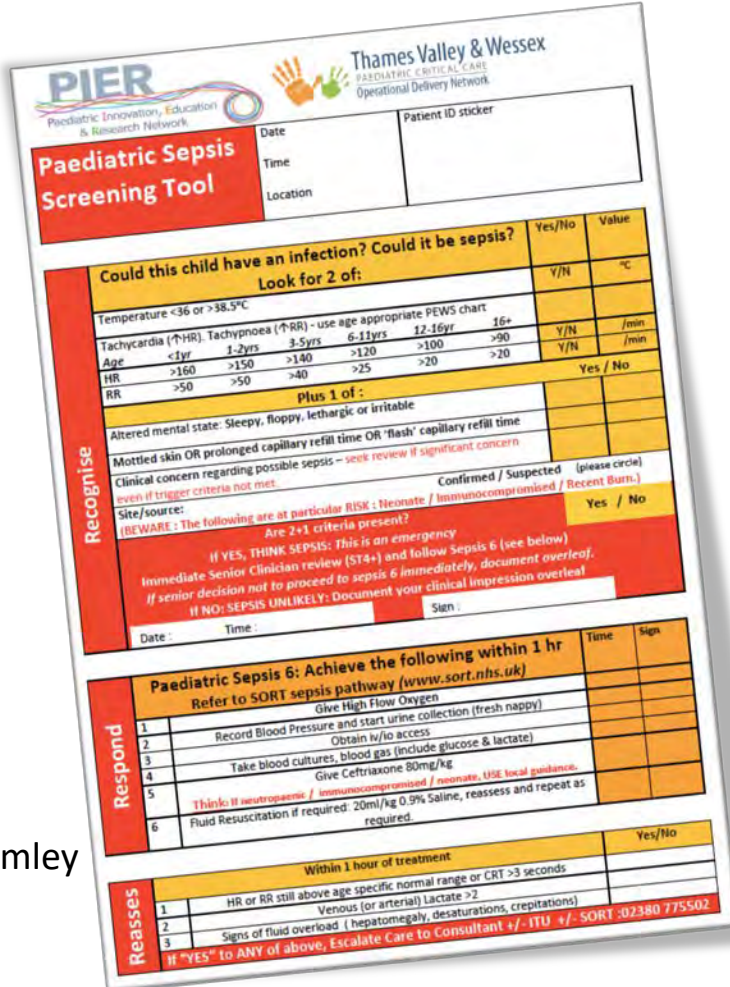
Oxford University Hospitals NHS Trust

Frimley Health NHS Foundation Trust

Milton Keynes University Hospital NHS Foundation Trust

Paediatric screening tool

- **Regional Collaboration**
 - Paediatric Critical Care Network (PCCN)
 - Children's Network
 - Oxford & Wessex AHSNs
- **Validated** against NICE guideline
 - Audit of 227 notes (PCCN)
 - Equally sensitive, more specific
- **Adopted by Oxford AHSN Sepsis group**
- **Implemented across Thames Valley**
 - including Oxford, Buckinghamshire, Milton Keynes, Frimley Health [Swindon agreed in principle]



PIER
Paediatric Innovation, Education & Research Network

Thames Valley & Wessex
PAEDIATRIC CRITICAL CARE
Operational Delivery Network

Paediatric Sepsis Screening Tool

Date: _____ Time: _____ Location: _____ Patient ID sticker: _____

Recognise

Could this child have an infection? Could it be sepsis? Yes/No Value

Look for 2 of:

Temperature <36 or >38.5°C	Y/N	°C
Tachycardia (↑HR): Tachypnoea (↑RR) - use age appropriate PEWS chart	Y/N	/min
Age <1yr 1-2yrs 3-5yrs 6-11yrs 12-16yr 16+	Y/N	/min
HR >160 >150 >140 >120 >100 >90	Y/N	/min
RR >50 >50 >40 >25 >20 >20	Y/N	/min

Plus 1 of:

Altered mental state: Sleepy, floppy, lethargic or irritable

Mottled skin OR prolonged capillary refill time OR 'flash' capillary refill time

Clinical concern regarding possible sepsis – seek review if significant concern even if trigger criteria not met.

Site/source: _____ Confirmed / Suspected (please circle) Yes / No

BEWARE: The following are at particular RISK: Neonate / Immunocompromised / Recent Burn.

Are 2+1 criteria present? _____

If YES, THINK SEPSIS: This is an emergency. Immediate Senior Clinician review (S4+) and follow Sepsis 6 (see below). If senior decision not to proceed to sepsis 6 immediately, document overleaf.

If NO: SEPSIS UNLIKELY: Document your clinical impression overleaf.

Date: _____ Time: _____ Stan: _____

Respond

Paediatric Sepsis 6: Achieve the following within 1 hr

Refer to SORT sepsis pathway (www.sort.nhs.uk)

	Time	Sign
1	Give High Flow Oxygen	
2	Record Blood Pressure and start urine collection (fresh nappy)	
3	Obtain i/v access	
4	Take blood cultures, blood gas (include glucose & lactate)	
5	Give Ceftriaxone 80mg/kg	
6	Fluid Resuscitation if required: 20ml/kg 0.9% Saline, reassess and repeat as required.	

Think: if neutropenic / immunocompromised / neonate, USE local guidance.

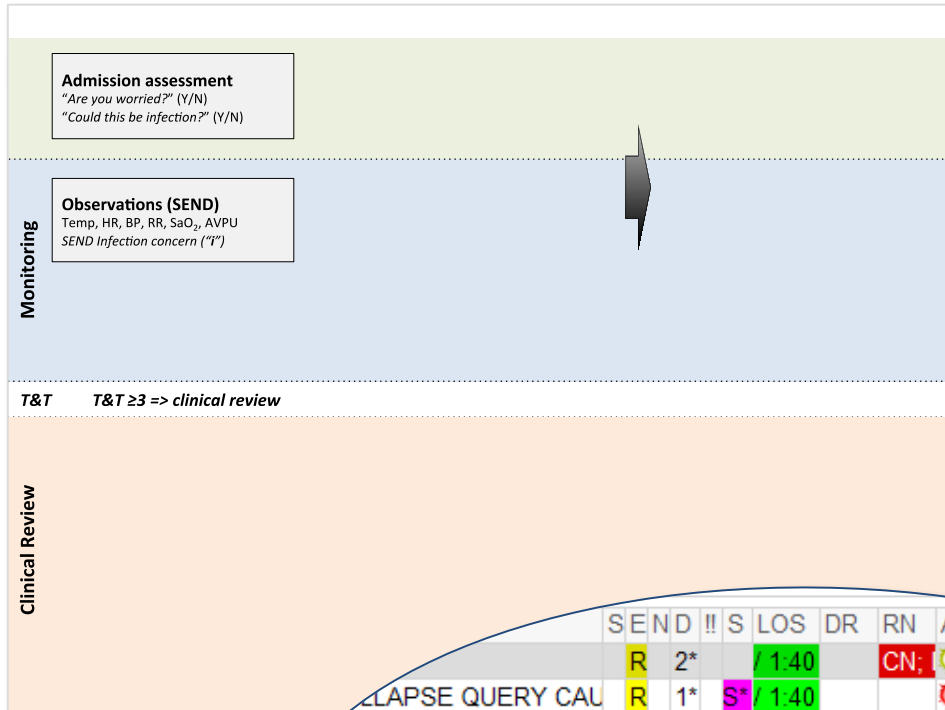
Reassess

	Yes/No
1	Within 1 hour of treatment
2	HR or RR still above age specific normal range or CRT >3 seconds
3	Venous (or arterial) Lactate >2
4	Signs of fluid overload hepatomegaly, desaturations, crepitations

If "YES" to ANY of above, Escalate Care to Consultant +/- ITU +/- SORT :02380 775502

Technological innovation (OUH)

Prompt Treatment



4 Medications

Supportive Treatment

- High Alert Oxygen Prescription
- Sodium chloride (Sodium chloride 0.9% BOLUS infusion) Dose: 500 mL - intraVenous - once ONLY - Infuse over 15 minutes as directed

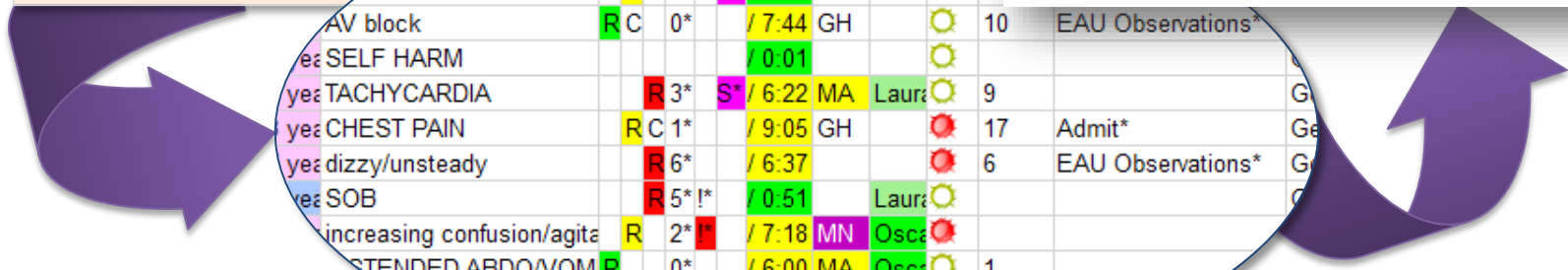
Antimicrobial Injections

- High Alert Aciclovir (Aciclovir injection) mg - intraVenous - infusion - three times a day - Indication: ... 10mg per kg
- Amoxicillin (Amoxicillin injection) Dose: 2,000 mg - intraVenous - injection - four times a day - Indication: sepsis
- cefTRIAXONE Dose: 2,000 mg - intraVenous - injection - once a day - Indication: sepsis
- Ciprofloxacin (Ciprofloxacin injection) Dose: 400 mg - intraVenous - injection - twice a day - Indication: sepsis

Details

Dx Table Sign

	SEND	!!	S	LOS	DR	RN	A	M
ELAPSE QUERY CAL	R	2*		/ 1:40		CN,		3
AV block	R	C	0*	/ 7:44	GH			10
SELF HARM				/ 0:01				
TACHYCARDIA	R	3*	S*	/ 6:22	MA	Laura		9
CHEST PAIN	R	C	1*	/ 9:05	GH			17
dizzy/unsteady	R	6*		/ 6:37				6
SOB	R	5*	!*	/ 0:51		Laura		
increasing confusion/agita	R	2*	!	/ 7:18	MN	Oscar		
STENDED ABDO/VOM	R	0*		/ 6:00	MA	Oscar		1
	R	0*		/ 2:24		Oscar		
TH ISSUE	R	0*		/ 1:57		Laura		



Sepsis *Working Together* event

Oxford, 19 Sep 2016

- **110 delegates**
- Acute Trusts (6)
- Community Trusts (2)
- Clinical Commissioning Groups (2)
- South Central Ambulance Service
- Private Hospitals (3)
- Care home providers
- NHS England
- Oxford AHSN
- Oxford University



Sepsis *Working Together* event

Oxford, 19 Sep 2016

Patient stories

Sam's story (Sue Morrish)

Geoff's story (film)



Policy

Celia Ingham Clarke: National sepsis update

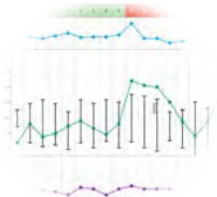
Nice Sepsis Guideline



Solutions

Sepsis recognition, Early Warning Scores

Ambulance Service, Acute Trusts



Sepsis *Working Together* event

Oxford, 19 Sep 2016



Very well run course, different from usual ones



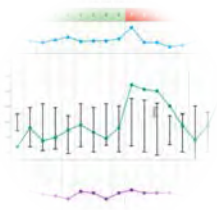
Very interesting and stimulating day



Excellent day, thought provoking



All speakers excellent, many new things learnt



Thank you for this amazing conference!



Sepsis *Working Together* event



Oxford, 19 Sep 2016

Honoured to hear Sue's story

*Sue's talk made me think about being more clear
and specific in giving instructions to patients in
future*

*I need to return to the basics of listening to patients
and clinical judgement*

National Collaboration

National Meetings

- NICE guideline launch, July 2016
- ‘Sepsis Unplugged’, Oct 2017
- ‘Think Sepsis’, Sir Bruce Keogh, Nov 2016
- National PSC Meeting, May 2017



PSC Sepsis Cluster

- National stakeholder survey
- Oxford AHSN Sepsis Pathway
- Stakeholder input nationally



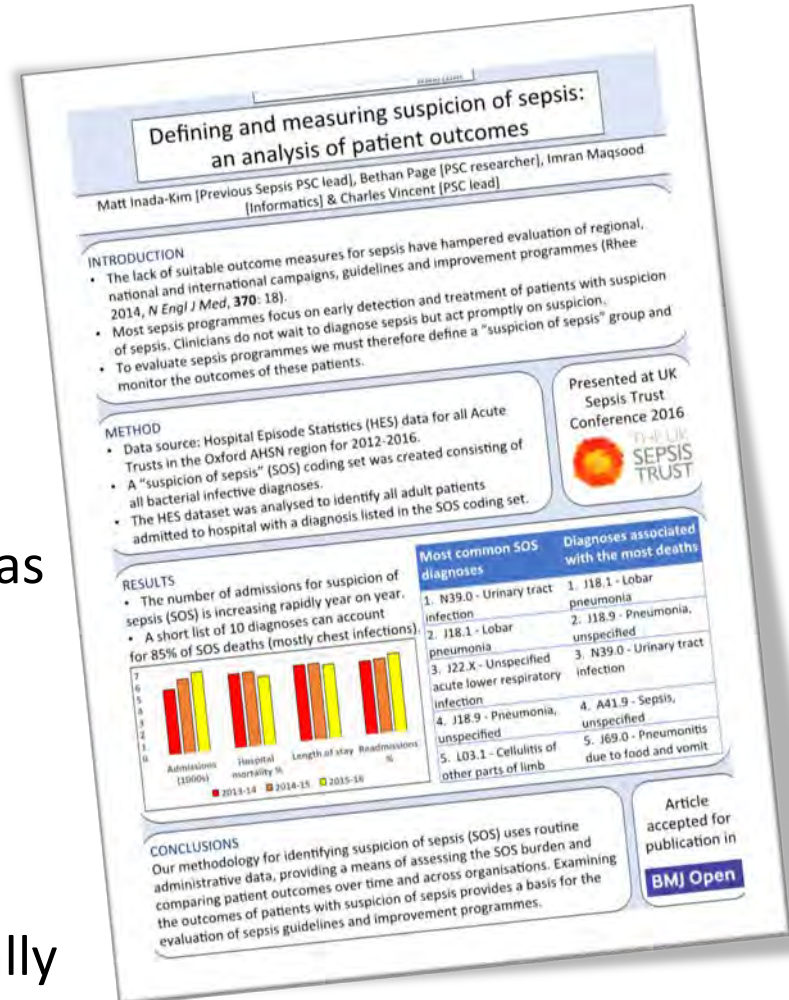
Measurement & Publication

Surveillance challenges

- HES sepsis codes insensitive
- QI initiatives → ascertainment bias
- Need improved case definition

HES Bacterial infection ('SOS') codes

- More sensitive, less ascertainment bias
- Temporal and geographic trends
- Inada-Kim *et al.* **BMJ Open** (*in press*)
- Presented at *Sepsis Unplugged* 2016
- NHSE collaboration to extend nationally



Defining and measuring suspicion of sepsis: an analysis of patient outcomes
Matt Inada-Kim [Previous Sepsis PSC lead], Bethan Page [PSC researcher], Imran Maqsood [Informatics] & Charles Vincent [PSC lead]

INTRODUCTION

- The lack of suitable outcome measures for sepsis have hampered evaluation of regional, national and international campaigns, guidelines and improvement programmes (Rhee 2014, *N Engl J Med*, 370: 18).
- Most sepsis programmes focus on early detection and treatment of patients with suspicion of sepsis. Clinicians do not wait to diagnose sepsis but act promptly on suspicion.
- To evaluate sepsis programmes we must therefore define a "suspicion of sepsis" group and monitor the outcomes of these patients.

METHOD

- Data source: Hospital Episode Statistics (HES) data for all Acute Trusts in the Oxford AHSN region for 2012-2016.
- A "suspicion of sepsis" (SOS) coding set was created consisting of all bacterial infective diagnoses.
- The HES dataset was analysed to identify all adult patients admitted to hospital with a diagnosis listed in the SOS coding set.

RESULTS

- The number of admissions for suspicion of sepsis (SOS) is increasing rapidly year on year.
- A short list of 10 diagnoses can account for 85% of SOS deaths (mostly chest infections).

Most common SOS diagnoses

1. N39.0 - Urinary tract infection	1. J18.1 - Lobar pneumonia
2. J18.1 - Lobar pneumonia	2. J18.9 - Pneumonia, unspecified
3. J22.X - Unspecified acute lower respiratory infection	3. N39.0 - Urinary tract infection
4. J18.9 - Pneumonia, unspecified	4. A41.9 - Sepsis, unspecified
5. I03.1 - Cellulitis of other parts of limb	5. J69.0 - Pneumonitis due to food and vomit

Diagnoses associated with the most deaths

CONCLUSIONS
Our methodology for identifying suspicion of sepsis (SOS) uses routine administrative data, providing a means of assessing the SOS burden and comparing patient outcomes over time and across organisations. Examining the outcomes of patients with suspicion of sepsis provides a basis for the evaluation of sepsis guidelines and improvement programmes.

Presented at UK Sepsis Trust Conference 2016

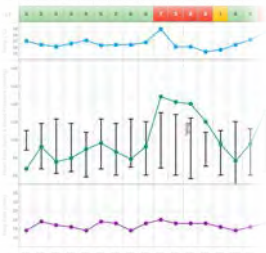
Article accepted for publication in **BMJ Open**

Ongoing work



NHS

Digital



**JUST
ASK
COULD
IT BE
SEPSIS?**



- Coding standardisation
- Validation of HES data using microbiology data
- Standardized assessment & safety netting
- Community sepsis pathway analysis
- Point of care testing
- Patient information leaflets
- Patient engagement exercise
- Ambulance interface (community & acute Trusts)

Paediatric screening tool

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- Paediatric Critical Care Network (PCCN)
- Children's Network
- Oxford & Wessex AHSNs

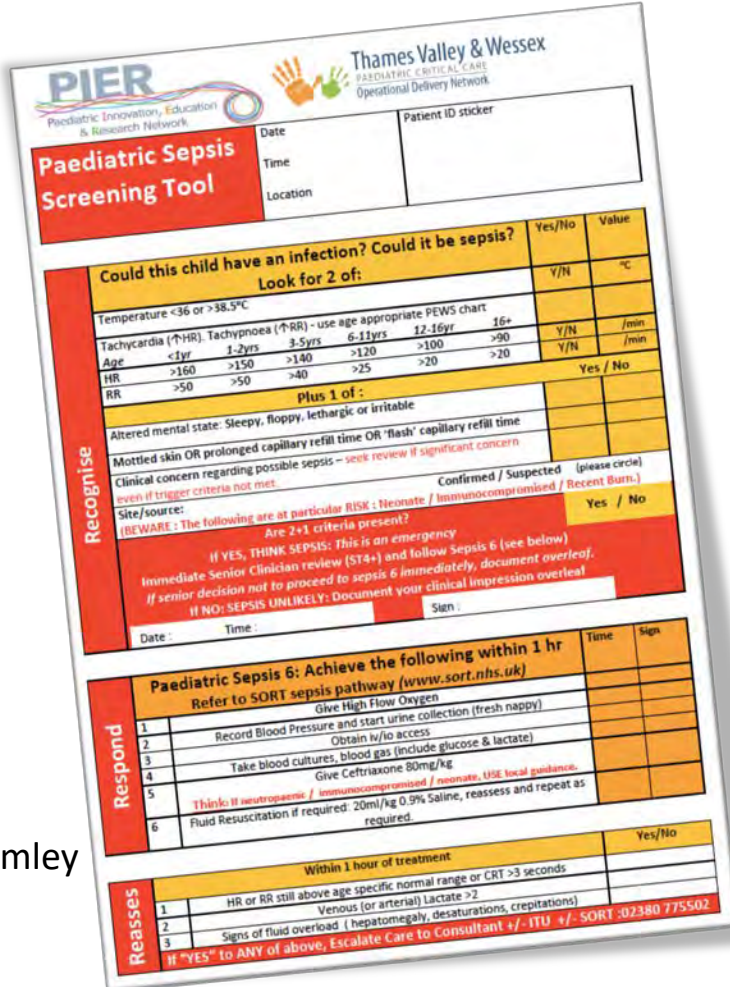
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PIER Paediatric Innovation, Education & Research Network

Thames Valley & Wessex PAEDIATRIC CRITICAL CARE Operational Delivery Network

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HR >160 >150 >140 >120 >100 >90	Y/N	/min
RR >50 >50 >40 >25 >20 >20	Y/N	/min

Plus 1 of:

Altered mental state: Sleepy, floppy, lethargic or irritable

Mottled skin OR prolonged capillary refill time OR 'flash' capillary refill time

Clinical concern regarding possible sepsis – seek review if significant concern even if trigger criteria not met.

Site/source: _____ Confirmed / Suspected (please circle) Yes / No

BEWARE: The following are at particular RISK: Neonate / Immunocompromised / Recent Burn.

Are 2+1 criteria present? _____

If YES, THINK SEPSIS: This is an emergency. Immediate Senior Clinician review (S4+) and follow Sepsis 6 (see below). If senior decision not to proceed to sepsis 6 immediately, document overleaf.

If NO: SEPSIS UNLIKELY: Document your clinical impression overleaf.

Date: _____ Time: _____ Sign: _____

Respond

Paediatric Sepsis 6: Achieve the following within 1 hr

Refer to SORT sepsis pathway (www.sort.nhs.uk)

1	Time	Sign
Give High Flow Oxygen		
Record Blood Pressure and start urine collection (fresh nappy)		
Obtain i/v access		
Take blood cultures, blood gas (include glucose & lactate)		
Give Ceftriaxone 80mg/kg		
Give Ceftriaxone 80mg/kg		
Think: if neutropenic / immunocompromised / neonate, USE local guidance.		
Fluid Resuscitation if required: 20ml/kg 0.9% Saline, reassess and repeat as required		

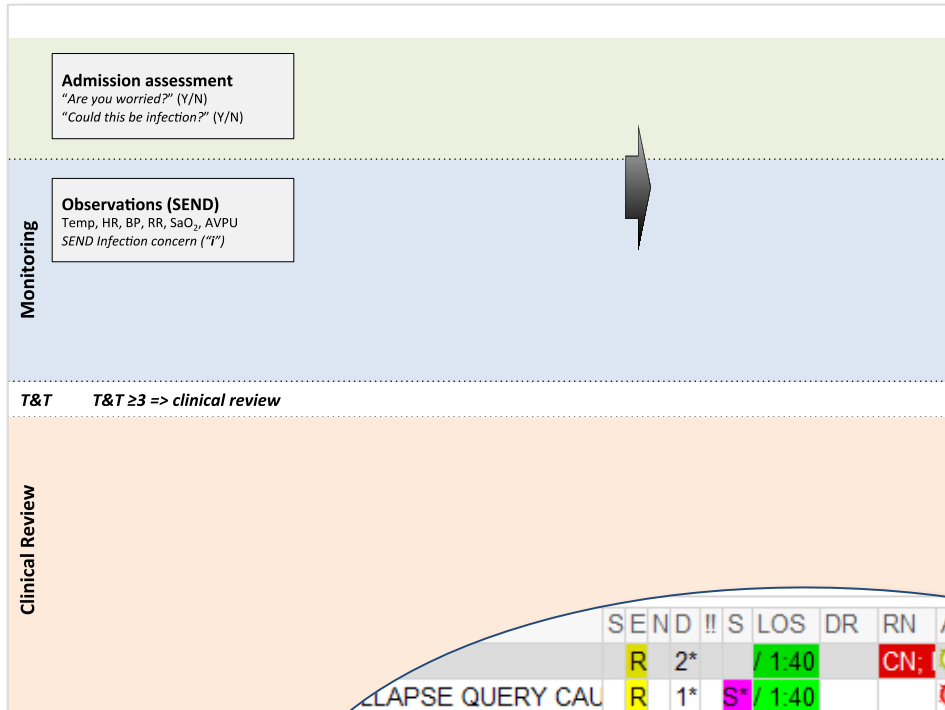
Reasses

1	Yes/No
Within 1 hour of treatment	
HR or RR still above age specific normal range or CRT >3 seconds	
Venous (or arterial) Lactate >2	
Signs of fluid overload hepatomegaly, desaturations, crepitations	

If "YES" to ANY of above, Escalate Care to Consultant +/- ITU +/- SORT :02380 775502

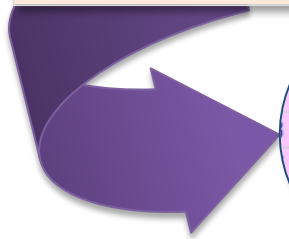
Technological innovation (OUH)

Prompt Treatment



Medications			
Supportive Treatment			
<input type="checkbox"/>	<input checked="" type="checkbox"/> High Alert Oxygen Prescription		
<input type="checkbox"/>	<input checked="" type="checkbox"/> Sodium chloride (Sodium chloride 0.9% BOLUS infusion)	Dose: 500 mL - intraVenous - once ONLY - Infuse over 15 minutes as directed	...
Antimicrobial Injections			
<input type="checkbox"/>	<input checked="" type="checkbox"/> High Alert Aciclovir (Aciclovir injection)	mg - intraVenous - infusion - three times a day - Indication: ...	10mg per kg
<input type="checkbox"/>	<input checked="" type="checkbox"/> Amoxicillin (Amoxicillin injection)	Dose: 2,000 mg - intraVenous - injection - four times a day - Indication: sepsis	...
<input type="checkbox"/>	<input checked="" type="checkbox"/> cefTRIAxONE	Dose: 2,000 mg - intraVenous - injection - once a day - Indication: sepsis	...
<input type="checkbox"/>	<input checked="" type="checkbox"/> Ciprofloxacin (Ciprofloxacin injection)	Dose: 400 mg - intraVenous - injection - twice a day - Indication: sepsis	...

	SEND	!!	S	LOS	DR	RN	A	M	
ELAPSE QUERY CAL	R	2*		/ 1:40		CN,		3	
AV block	R	C 0*		/ 7:44	GH			10	EAU Observations*
SELF HARM				/ 0:01					
TACHYCARDIA	R	3*	S*	/ 6:22	MA	Laura		9	
CHEST PAIN	R	C 1*		/ 9:05	GH			17	Admit*
dizzy/unsteady	R	6*		/ 6:37				6	EAU Observations*
SOB	R	5*	!	/ 0:51		Laura			
increasing confusion/agita	R	2*	!	/ 7:18	MN	Oscar			
STENDED ABDO/VOM	R	0*		/ 6:00	MA	Oscar		1	
	R	0*		/ 2:24		Oscar			
TH ISSUE	R	0*		/ 1:57		Laura			Ref



Sepsis *Working Together* event

Oxford, 19 Sep 2016

- **110 delegates**
- Acute Trusts (6)
- Community Trusts (2)
- Clinical Commissioning Groups (2)
- South Central Ambulance Service
- Private Hospitals (3)
- Care home providers
- NHS England
- Oxford AHSN
- Oxford University



Sepsis *Working Together* event

Oxford, 19 Sep 2016

Patient stories

Sam's story (Sue Morrish)

Geoff's story (film)



Policy

Celia Ingham Clarke: National sepsis update

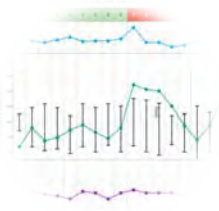
Nice Sepsis Guideline



Solutions

Sepsis recognition, Early Warning Scores

Ambulance Service, Acute Trusts



Sepsis *Working Together* event

Oxford, 19 Sep 2016



Very well run course, different from usual ones



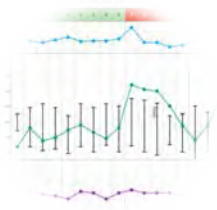
Very interesting and stimulating day



Excellent day, thought provoking



All speakers excellent, many new things learnt



Thank you for this amazing conference!



Sepsis *Working Together* event

Oxford, 19 Sep 2016



Honoured to hear Sue's story

*Sue's talk made me think about being more clear
and specific in giving instructions to patients in
future*

*I need to return to the basics of listening to patients
and clinical judgement*

National Collaboration

National Meetings

- NICE guideline launch, July 2016
- ‘Sepsis Unplugged’, Oct 2017
- ‘Think Sepsis’, Sir Bruce Keogh, Nov 2016
- National PSC Meeting, May 2017



PSC Sepsis Cluster

- National stakeholder survey
- Oxford AHSN Sepsis Pathway
- Stakeholder input nationally



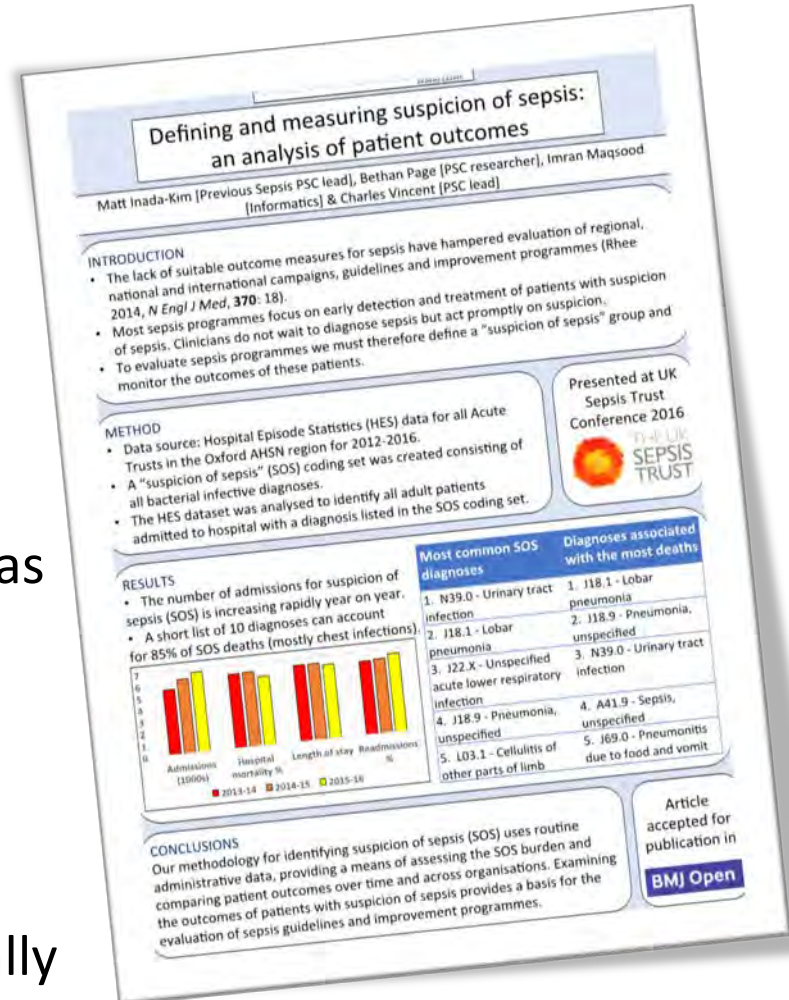
Measurement & Publication

Surveillance challenges

- HES sepsis codes insensitive
- QI initiatives → ascertainment bias
- Need improved case definition

HES Bacterial infection ('SOS') codes

- More sensitive, less ascertainment bias
- Temporal and geographic trends
- Inada-Kim *et al.* **BMJ Open** (*in press*)
- Presented at *Sepsis Unplugged* 2016
- NHSE collaboration to extend nationally



Defining and measuring suspicion of sepsis: an analysis of patient outcomes
Matt Inada-Kim [Previous Sepsis PSC lead], Bethan Page [PSC researcher], Imran Maqsood [Informatics] & Charles Vincent [PSC lead]

INTRODUCTION

- The lack of suitable outcome measures for sepsis have hampered evaluation of regional, national and international campaigns, guidelines and improvement programmes (Rhee 2014, *N Engl J Med*, 370: 18).
- Most sepsis programmes focus on early detection and treatment of patients with suspicion of sepsis. Clinicians do not wait to diagnose sepsis but act promptly on suspicion.
- To evaluate sepsis programmes we must therefore define a "suspicion of sepsis" group and monitor the outcomes of these patients.

METHOD

- Data source: Hospital Episode Statistics (HES) data for all Acute Trusts in the Oxford AHSN region for 2012-2016.
- A "suspicion of sepsis" (SOS) coding set was created consisting of all bacterial infective diagnoses.
- The HES dataset was analysed to identify all adult patients admitted to hospital with a diagnosis listed in the SOS coding set.

RESULTS

- The number of admissions for suspicion of sepsis (SOS) is increasing rapidly year on year.
- A short list of 10 diagnoses can account for 85% of SOS deaths (mostly chest infections).

Most common SOS diagnoses

1. N39.0 - Urinary tract infection	1. J18.1 - Lobar pneumonia
2. J18.1 - Lobar pneumonia	2. J18.9 - Pneumonia, unspecified
3. J22.X - Unspecified acute lower respiratory infection	3. N39.0 - Urinary tract infection
4. J18.9 - Pneumonia, unspecified	4. A41.9 - Sepsis, unspecified
5. I03.1 - Cellulitis of other parts of limb	5. J69.0 - Pneumonitis due to food and vomit

Diagnoses associated with the most deaths

CONCLUSIONS
Our methodology for identifying suspicion of sepsis (SOS) uses routine administrative data, providing a means of assessing the SOS burden and comparing patient outcomes over time and across organisations. Examining the outcomes of patients with suspicion of sepsis provides a basis for the evaluation of sepsis guidelines and improvement programmes.

Presented at UK Sepsis Trust Conference 2016

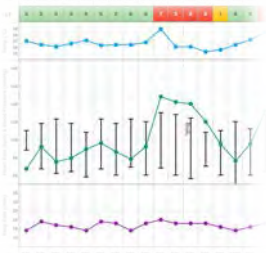
Article accepted for publication in **BMJ Open**

Ongoing work



NHS

Digital



**JUST
ASK
COULD
IT BE
SEPSIS?**



- Coding standardisation
- Validation of HES data using microbiology data
- Standardized assessment & safety netting
- Community sepsis pathway analysis
- Point of care testing
- Patient information leaflets
- Patient engagement exercise
- Ambulance interface (community & acute Trusts)



Sepsis in SCAS

Oxford AHSN Presentation

Mark Ainsworth-Smith

'MaS from SCAS'

Consultant Pre-Hospital Care Practitioner

3rd May 2017

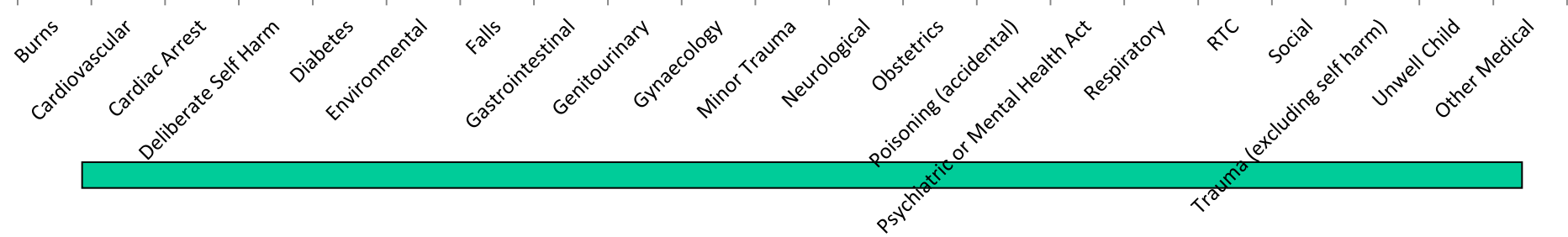




The types of incident that we attend...

← Sepsis can sit in any one of these →

560,000 x 999
1.25 million x 111



Response Categories

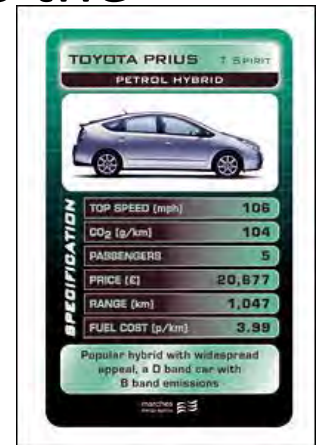
- Where an Emergency Ambulance response is required, **NHS Pathways** clinically categorizes the calls into:

RED 1 Calls – 8 minute first response

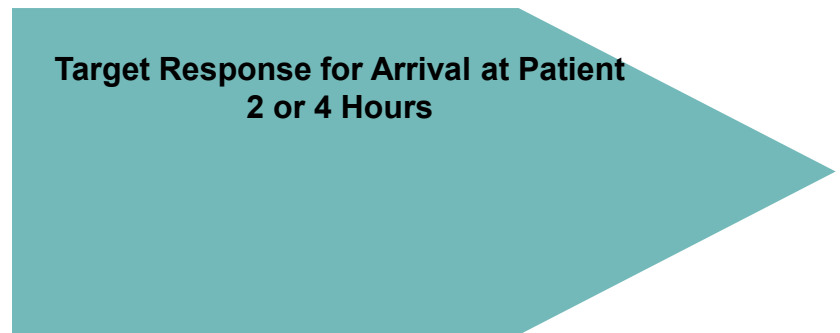
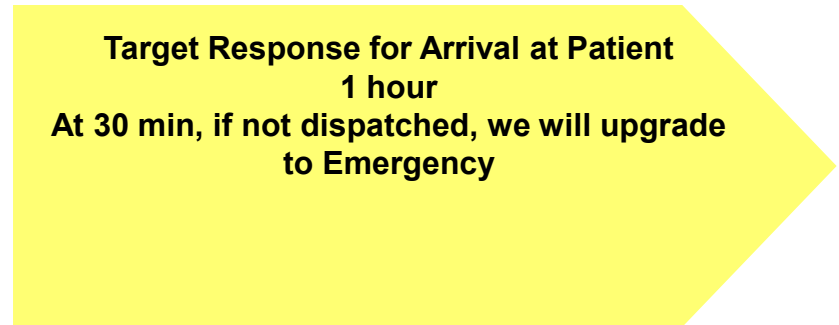
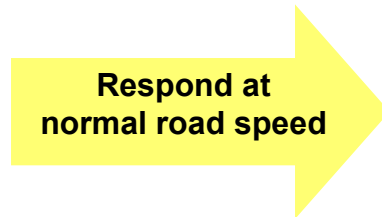
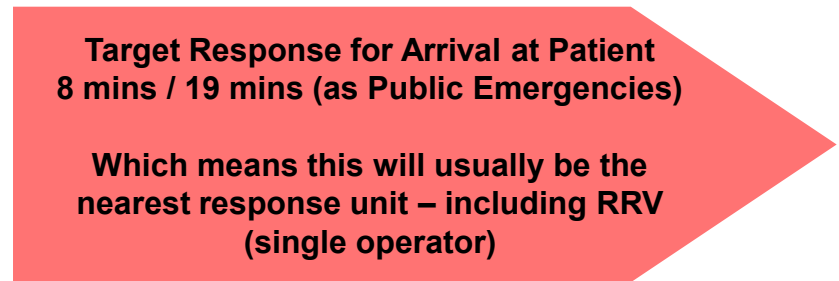
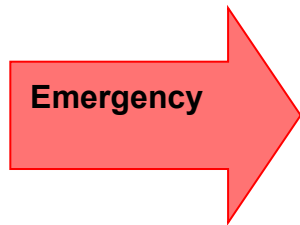
RED 2 Calls – 8 minute first response

GREEN 30 Calls – 30 minute first response

GREEN 60 Calls – further assessment by a clinician over the telephone OR 60 minute response

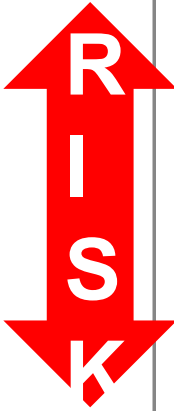
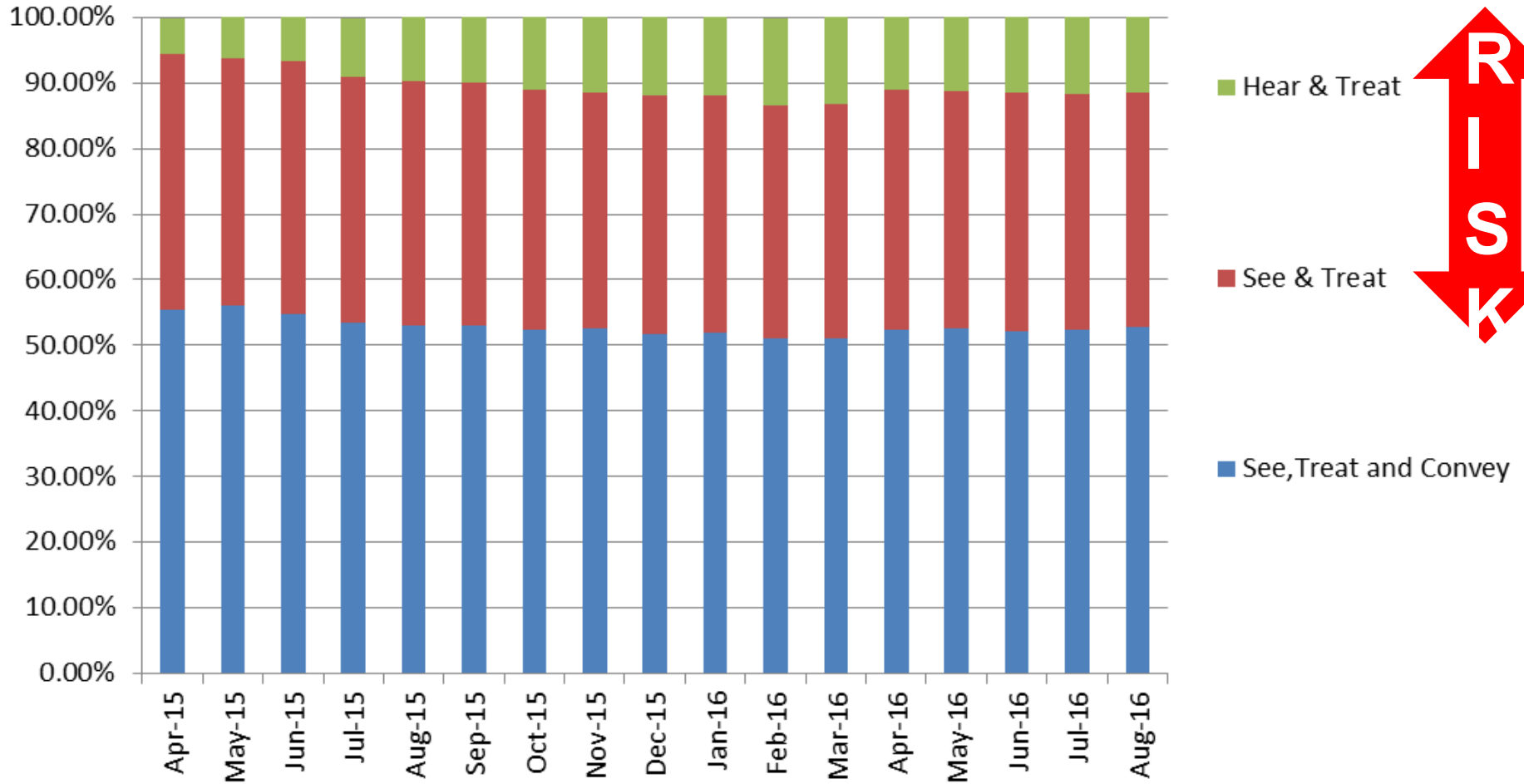


HCP Admission Time Frames





Dispositions in SCAS (999)





Our challenges.....



Our challenges.....

External challenges

- **No standardisation / 2 networks**
- **Varied reception at hospitals**
- **Variation in HCP requests**
- **DSAs**

Internal Challenges

- **Release of staff for training**
- **Reliance on individuals**
- **Private Providers**
- **Cascade of information to staff**



In-Hospital Elements of Sepsis 6

1	Oxygen	
2	Blood Cultures, FBC, U+E, LFT, clotting screen, glucose	X
3	IV Antibiotics	X
4	Fluid Resuscitation	
5	Lactate	X
6	(Catheterisation) <u>Fluid Balance</u>	X



Sepsis Screening

**There have been a wide variety
of sepsis screening tools.....**

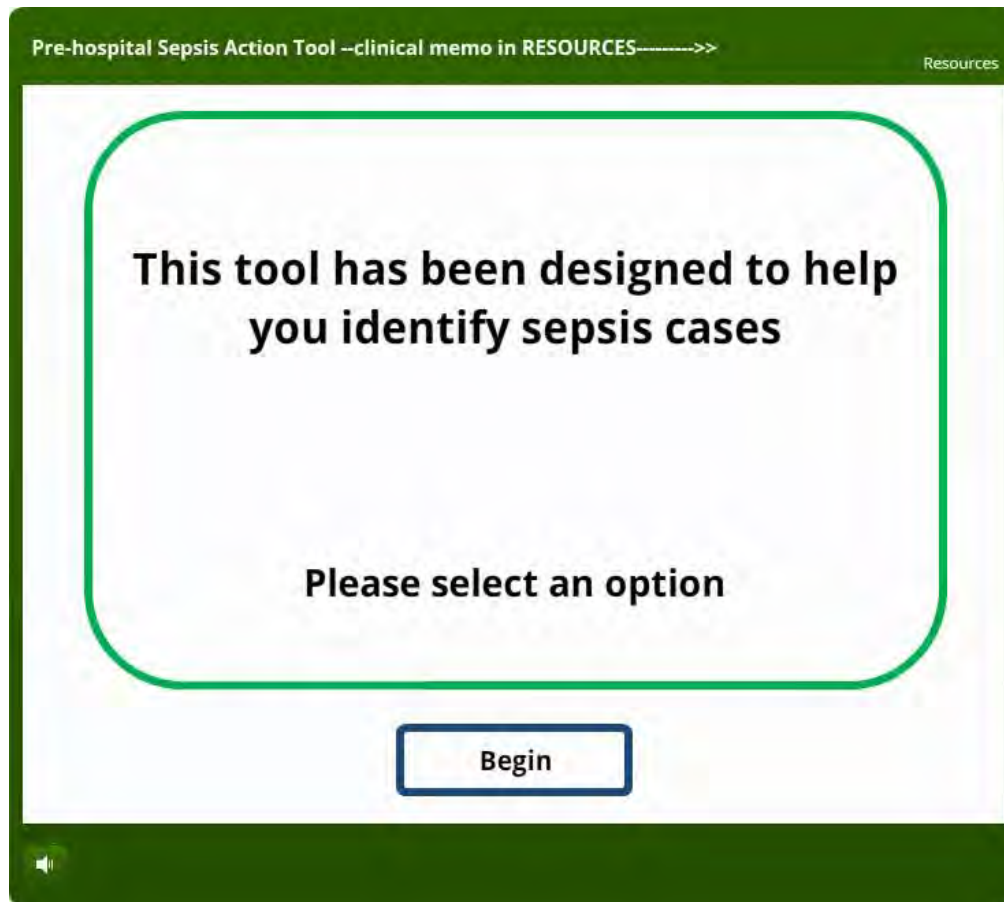


Sepsis Screening Tools

- **SIRS**
- **CURB65 (Respiratory)**
- **qSOFA**
- **NICE 2016**
- **SCAS Sepsis screening tool.....**



SCAS crews are using a sepsis recognition tool



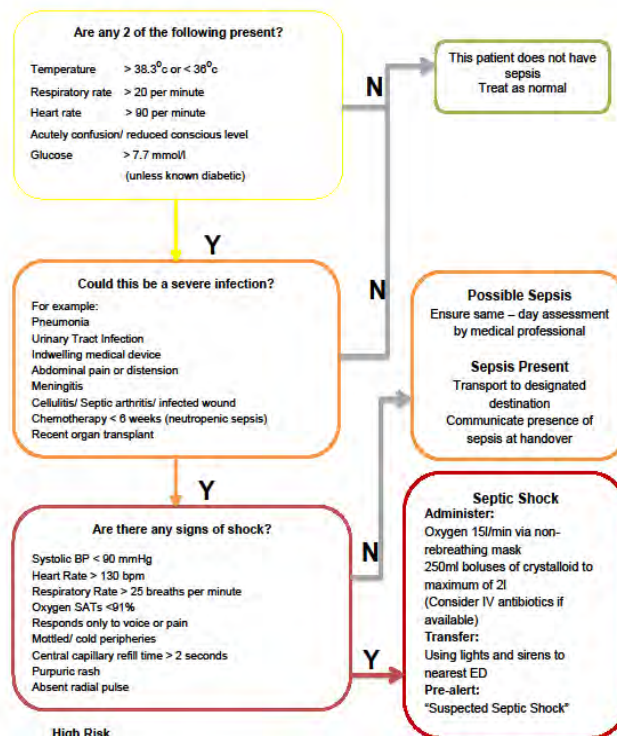


Adult Sepsis Screening Tool

South Central Ambulance Service **NHS**
NHS Foundation Trust

Pre-hospital Sepsis Screening and Action Tool

Adult



High Risk

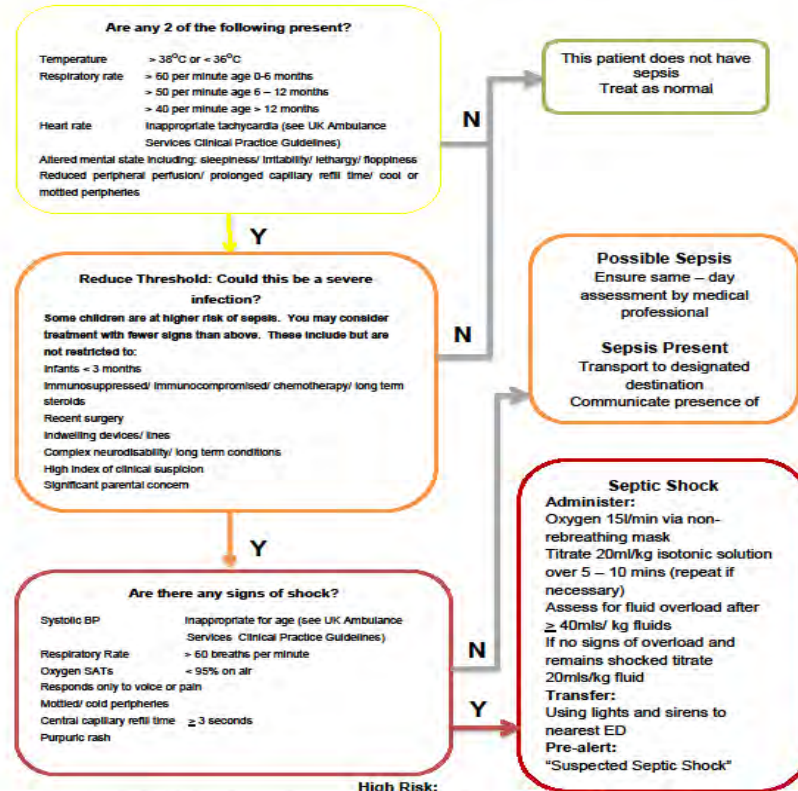
Patients who have been in contact with a number of health care professionals or services with no apparent resolution or improvement. Consider escalation to an assessment facility / ED



Paediatric Screening Tool

South Central Ambulance Service **NHS**
NHS Foundation Trust

Pre-hospital Sepsis Screening and Action Tool Paediatric



High Risk:

- Children that have been seen by an HCP within the previous 24 hours, and have exacerbated or non-improved symptoms.
- Children under 2 (Should normally be conveyed to ED or a HCP for face to face assessment)



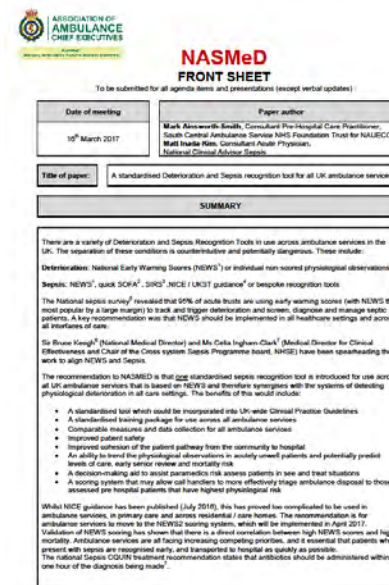
NEWS2



Paper submitted to NASMeD / AACE recommending that NEWS2 is adopted across all UK ambulance services.

Benefits:

- Consistency of care
- Standardised training
- Development of national guidelines
- Creation of CPIs:
 - Administration of oxygen
 - IV Fluids
 - Pre-alert



NASMeD FRONT SHEET
To be submitted for all agency items and presentations (except verbal updates)

Date of meeting	Paper author
19 th March 2017	Mark Roseworth Smith, Consultant Pre-Hospital Care Practitioner, South Central Ambulance Service NHS Foundation Trust for NASECO Matt Insole Hale, Consultant Anaesthetic Physician, National Clinical Assessment Service
Title of paper:	A standardised Deterioration and Sepsis recognition tool for all UK ambulance services
SUMMARY	

There are a variety of Deterioration and Sepsis Recognition Tools in use across ambulance services in the UK. The separation of these conditions is counter-inductive and potentially dangerous. These include:

- Deterioration: National Early Warning Scores (NEWS2) or individual non scored physiological observations
- Sepsis: NEWS2, quick SOFA¹, qSOFA², SIRS³, NICE (LUST) guidance⁴ or bespoke recognition tools.

The national sepsis survey⁵ revealed that GPs of acute trusts are using early warning scores (with NEWS2 the most popular for a large number) to track and trigger deterioration and review, diagnose and manage septic patients. A key recommendation was that NEWS2 should be implemented in all healthcare settings and across all specialties of care.

Sir Bruce Venge⁶ (National Medical Director) and Mr. Colin Ingham-Clark⁷ (Medical Director for Clinical Effectiveness and Chair of the Crisis System Sepsis Programme board, NHSE) have been spearheading the work to align NEWS2 and Sepsis.

The recommendation to NASMeD is that one standardised sepsis recognition tool is introduced for use across all UK ambulance services that is based on NEWS2 and therefore synergises with the systems of detecting physiological deterioration in all care settings. The benefits of this would include:

- A standardised tool which could be incorporated into UK-wide Clinical Practice Guidelines
- A standardised training package for use across all ambulance services
- Comparable measures and data collection for all ambulance services
- Improved patient safety
- Improved cohesion of the patient pathway from the community to hospital
- An ability to level the physiological observations in acutely unwell patients and potentially predict levels of care, early senior review and mortality risk
- A decision-making aid to assist paramedics risk assess patients in see and treat situations
- A scoring system that may allow call handlers to more effectively stage ambulance disposal to those assessed per hospital patients that have highest prehospital risk

While NICE guidance has been published (July 2016), this has proved too complicated to be used in ambulance services, in primary care and across residential / care homes. The recommendation is for ambulance services to move to the NEWS2 scoring system, which will be implemented in April 2017. Validation of NEWS2 scoring has shown that there is a direct correlation between high NEWS2 scores and high mortality. Ambulance services are all facing increasing competing priorities, and it is essential that patients who present with sepsis are recognised early, and transported to hospital as quickly as possible. The national Sepsis COGN treatment recommendation states that antibiotics should be administered within one hour of the diagnosis being made.



Likely to be identical to NEWS score but:

- **Change in Mental State from AVPU to ACVPU**
- **No red flags**
- **Guidance for COPD**

Limitations in pregnancy and paediatrics
Expansion to Primary Care and RCHs



NEWS2 (a guess!)

National Early Warning Score (NEWS)*

PHYSIOLOGICAL PARAMETERS	3	2	1	0	1	2	3
Respiration Rate	≤8		9 - 11	12 - 20		21 - 24	≥25
Oxygen Saturations	≤91	92 - 93	94 - 95	≥96			
Any Supplemental Oxygen		Yes		No			
Temperature	≤35.0		35.1 - 36.0	36.1 - 38.0	38.1 - 39.0	≥39.1	
Systolic BP	≤90	91 - 100	101 - 110	111 - 219			≥220
Heart Rate	≤40		41 - 50	51 - 90	91 - 110	111 - 130	≥131
Level of Consciousness				A		C	V, P, or U

*The NEWS initiative flowed from the Royal College of Physicians' NEWS Development and Implementation Group (NEWSDIG) report, and was jointly developed and funded in collaboration with the Royal College of Physicians, Royal College of Nursing, National Outreach Forum and NHS Training for Innovation.

Please see next page for explanatory text about this chart.

© Royal College of Physicians 2012





NEWS Mortality

NEWS	Mortality
0	0.5%
<5	5.5%
≥5	22%
≥7	27%
≥9	38%



Important

NEWS2 is NOT a replacement for clinical judgement

Likely to be:

NEWS2 = 5+ Pre-alert / BLT

NEWS2 = 3-4 Convey to hospital

NEWS2 = Below 3 GP triage

No sepsis screening tool is infallible



If sepsis is suspected.....

- **Administration of IV fluids / Oxygen**
- **Minimal time 'on scene' (CPI)**
- **Pre-alert to nearest hospital**
- **Blue light transfer**

Unlike the loW we will not be taking blood cultures or administering antibiotics *except* in cases of suspected meningococcal meningitis (no blood cultures required)



NEWS Score							
Physiological parameters	3	2	1	0	1	2	3
Pulse Rate	Red	Orange	Green	Grey	Green	Orange	Red
Respiratory Rate	Red	Orange	Green	Grey	Green	Orange	Red
SpO2	Red	Orange	Green	Grey	Green	Orange	Red
Supplemental oxygen used	Red	Orange	Green	Grey	Green	Orange	Red
Systolic BP	Red	Orange	Green	Grey	Green	Orange	Red
Temperature	Red	Orange	Green	Grey	Green	Orange	Red
AVPU	Red	Orange	Green	Grey	Green	Orange	Red
Total Score				0			



0/1

- New Change Delete < >

Incident

Primary Survey

Vital Signs

AMPLE

Examination

Clinical Inter-
-ion

Capno-
graphy

12 Lead

Shocks

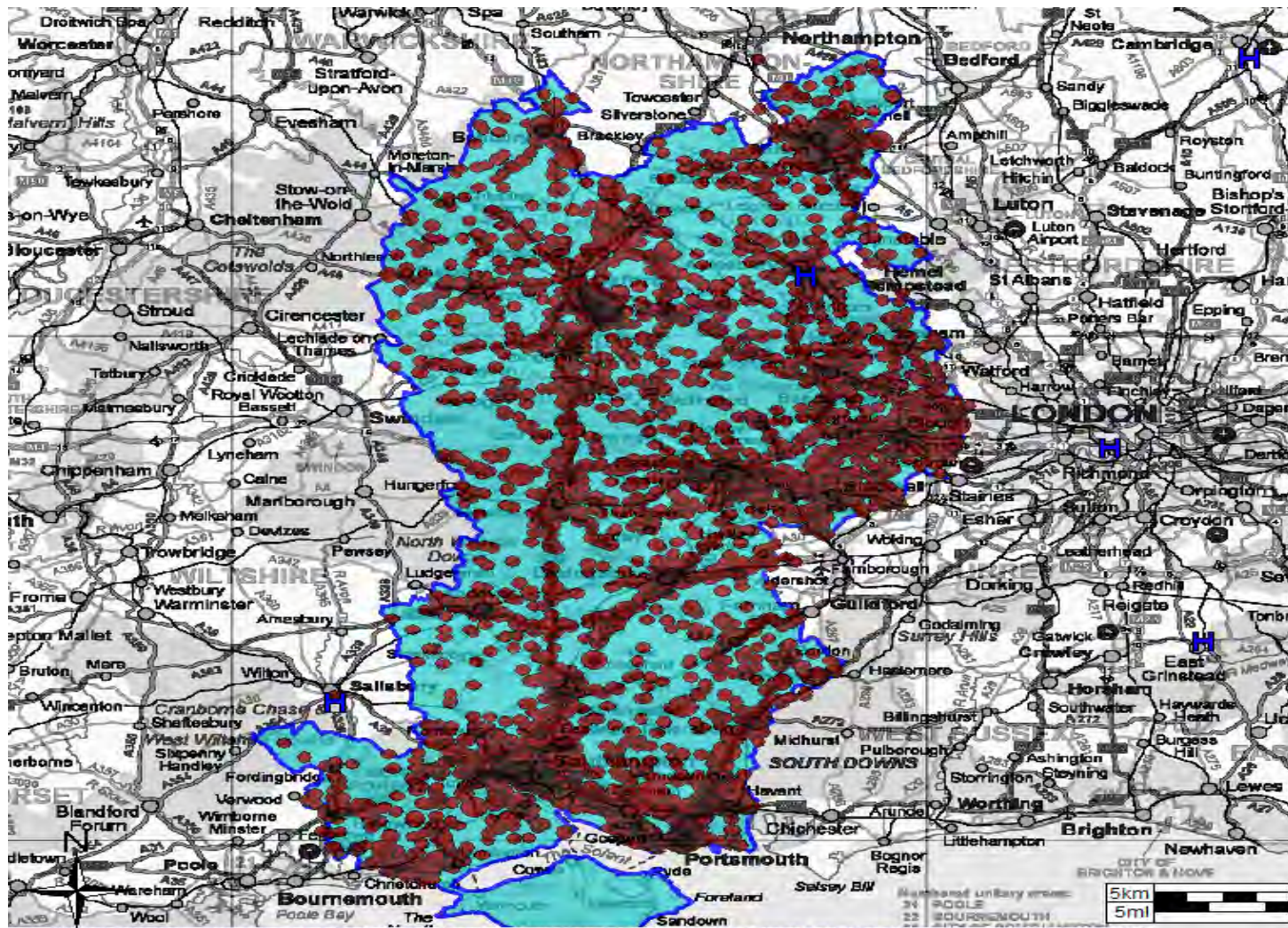
Snapshots

Blood Test

	09:42
Pulse	87
Resp Rate	29
SpO2 (on air)	94
SpO2 (on oxygen)	98
Systolic BP	137
Temperature	38.3
AVPU	Pain
POPS Breathing	Stridor
POPS Other	Diabetes
Gut Feeling	Looks unwell
NEWS	10



RTC – not sepsis



Map shows the distribution of incidents where the Trauma group is RTC.

Questions / Discussion



Fractures Liaison Service

- Dr Kassim Javaid, Consultant Rheumatologist
- (presentation to follow)

ICHOM and Inflammatory Bowel Disease PROMs

- Professor Simon Travis, Consultant Gastroenterologist



**International Consortium for Health
Outcomes Measurement**

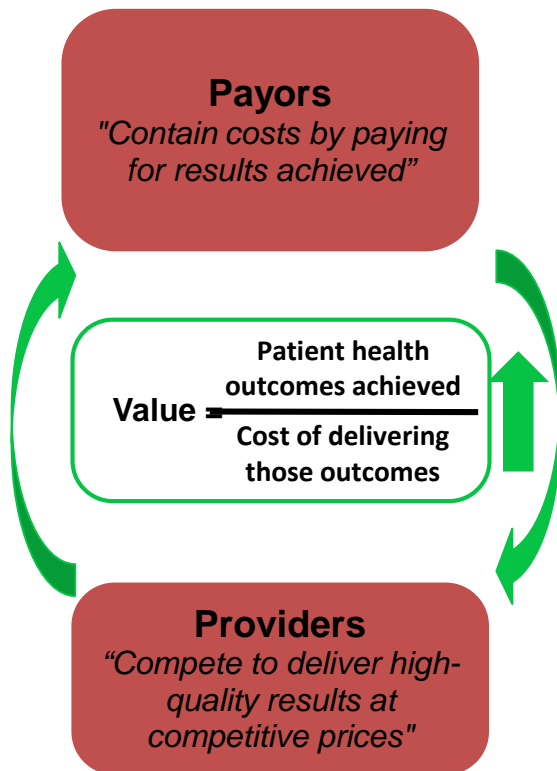
ICHOM and the IBD Standard Set

Wednesday 29th March 2017

ICHOM is founded on the principle of value-based health care

We believe in a model where value is at the center of health care...

... which will impact every stakeholder



Patients will **choose their provider** based on its expected outcomes and their share of the cost



Providers will **compete** to deliver superior outcomes at competitive prices



Payors will **negotiate contracts based on results** and encourage innovation to achieve those results



Suppliers will **market their products on value**, showing improved outcomes relative to costs

The starting point for value-based health care reform is to measure meaningful outcomes

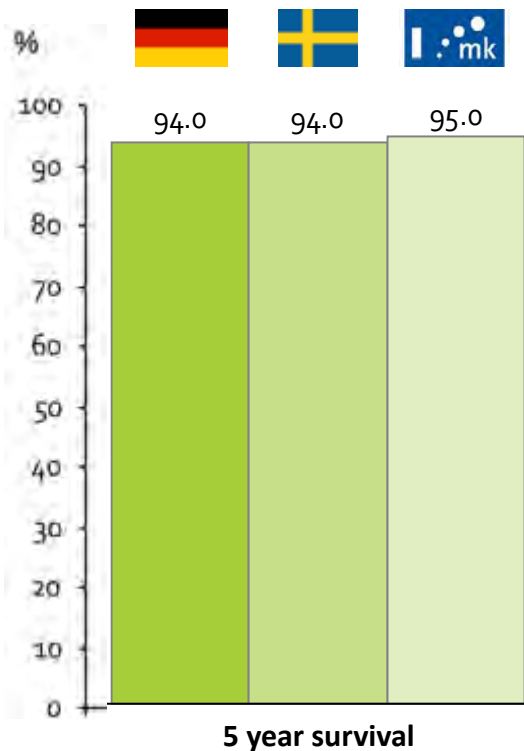
5 reasons why outcome measurement is essential:

- 1 Outcomes define the **goal of the organization** and its accountability to patients
- 2 Outcomes inform the **composition** of integrated care teams
- 3 Outcomes motivate clinicians to collaborate and **improve together**
- 4 Outcomes highlight **value-enhancing cost reduction**
- 5 Outcomes enable payment to shift **from volume to results**

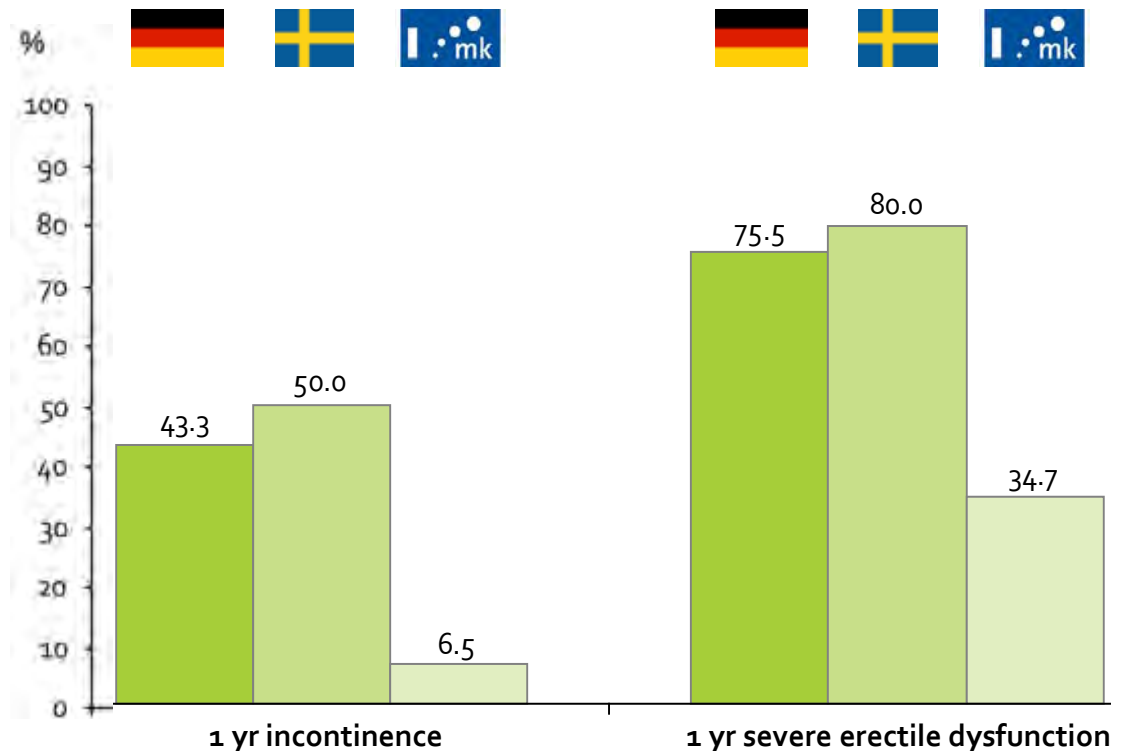
This is why measuring and reporting meaningful outcomes matters

Comparing outcomes of prostate cancer care

Focussing on mortality alone...



...may obscure large differences in outcomes that matter most to patients



Germany Sweden Best-in-class: Martini Klinik

We have completed 21 Standard Sets thus far, covering >45% of the disease burden

Our current 21 Standard Sets



2016-2017 commitments

1. Chronic kidney disease
2. Inflammatory arthritis
3. Oral health
4. Congenital hand and upper limb malformations
5. Paediatric facial palsy
6. Hypertension*
7. Type II diabetes
8. **In discussions to launch**

1. Overall adult health
2. Mental health package
3. Type I diabetes
4. Overall child health
5. Overall cancer
6. Pediatric epilepsy
7. Multiple sclerosis
8. COPD
9. Morbid obesity

*Focused on low and middle income countries

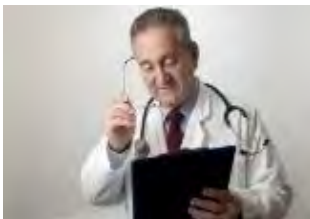
Numbers not representing prioritization/ likelihood

ICHOM organises Working Groups to define Standard Sets of outcomes we recommend all care providers track

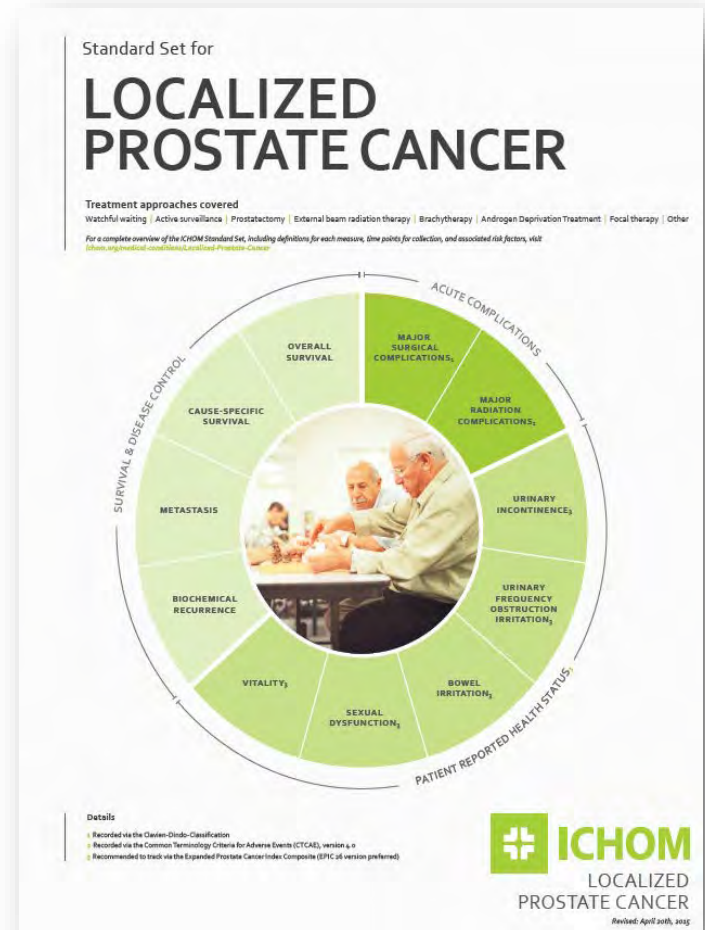


ICHOM facilitates a process with international clinical and registry leaders and patient representatives to develop a global Standard Set of outcomes that really matter to patients, along with corresponding case-mix factors

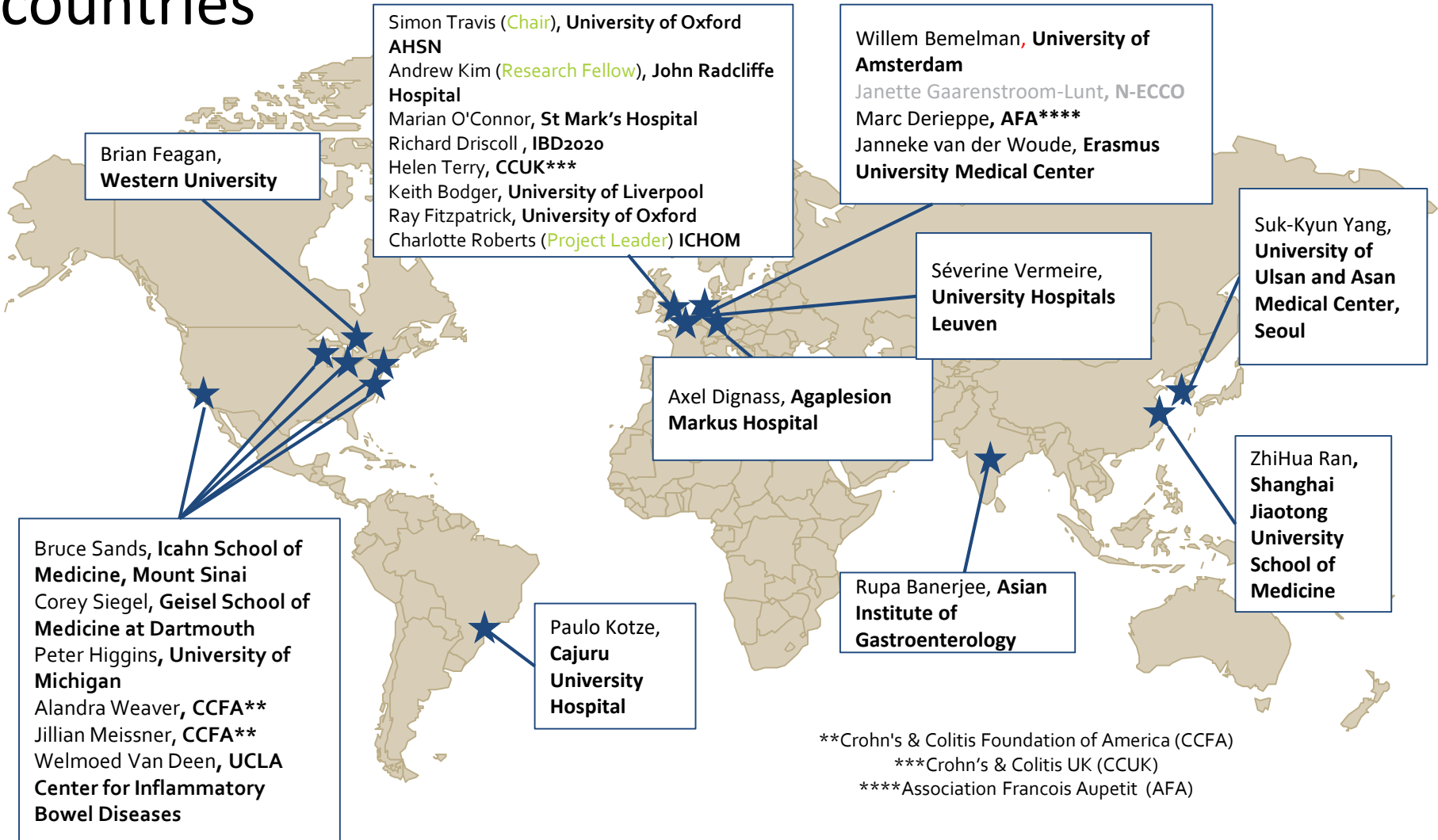
Clinical and registry leaders



Patient representatives



The Inflammatory Bowel Disease Standard Set was developed by a team representing 10 countries



We research key elements when selecting the best PROM tools for our Standard Sets

• Our PROM selection is based on 5 key elements:

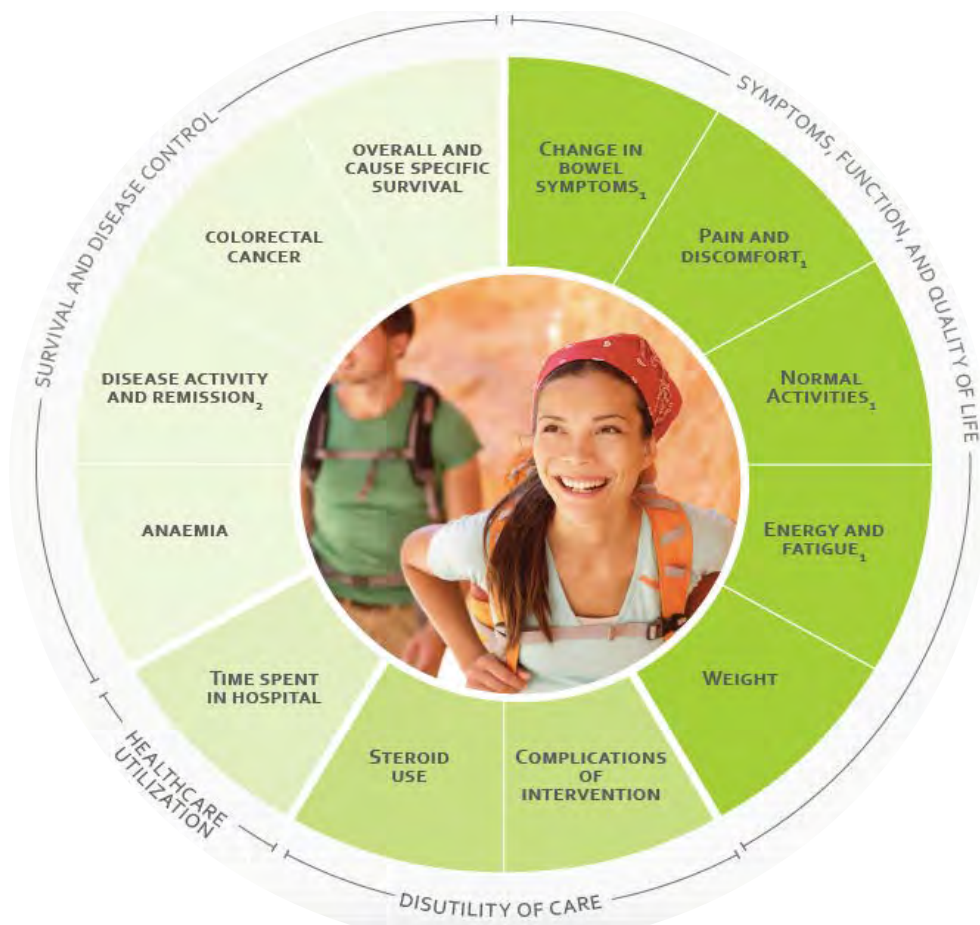
1. Coverage of outcome domains of importance
2. Psychometric Quality - ISOQOL standards
3. Feasibility - Burden of assessment
4. Financial - Licensing aspects
5. Established - Locations in use/# translations

Sample research sheet used to score PROMs

		Brief definition and instruction	Generic PROMs (Any disease)	
0	GENERIC INFO	ABBREVIATED NAME	This is the name the prom is most known for. For example: EPIC-26	PROM I name
1	CONCEPTUAL & MEASUREMENT	CONCEPTUAL AND MEASUREMENT MODEL	Give a generic description and purpose of the PROM.	High
		TARGET POPULATION	The intended population(s) for use	High
2	RELIABILITY	TEST-RETEST RELIABILITY (= reproducibility)	Stability of scores over time when no change is expected in the concept of	High
		RELIABILITY - INTERNAL CONSISTENCY	Extent to which the items comprising a PROM instrument are measuring the	Low
3	VALIDITY	CONTENT VALIDITY	The appropriateness of the items and the domains.	High
		CONSTRUCT VALIDITY*	Evidence that relationships among items, domains, and concepts conform	Med
		RESPONSIVENESS (Ability to detect change)	An instrument's ability to detect change over time.	Med
4	INTERPRETABILITY	INTERPRETABILITY	The degree to which one can assign easily understood meaning to an	Low
5	TRANSLATION	TRANSLATION	List the original languages as well as all available PROM translations (comma	High
6	BURDEN	PATIENT BURDEN	Time, energy and literacy demand. Literacy demand of the items in the	High
		ADMINISTRATIVE BURDEN	Clinician/administrative/investigator/data analyst burden (time, energy,	High
7	LICENSING	LICENCING	Information on licensing and licensing costs	Unknown
8	ESTABLISHED?	LOCATIONS IN USE	Number of locations (countries) where PROM is in use	High
		# of CITATIONS	Number of citations of original article	Unknown
		YEAR DEVELOPED	Year of original publication	High

ICHOM does not create measurement tools, we research the PROMs that are available in the field, per condition

ICHOM Standard Set for Inflammatory Bowel Disease : Outcomes




Treatment Approaches

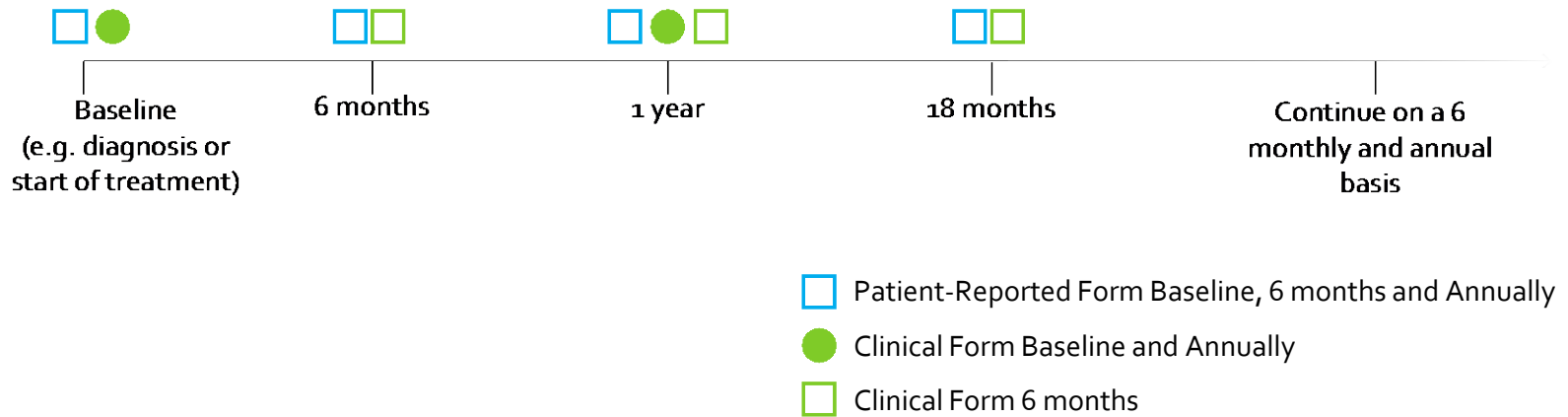
- Surgical
- Medical
- Supportive and nutritional

Sponsored by:

IBD Control

1 Do you believe that:				4 At your next clinic visit, would you like to discuss:			
a. Your IBD has been well controlled in the past two weeks?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>	a. Alternative types of drug for controlling IBD	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>
b. Your current treatment is useful in controlling your IBD? <small>(If you are not taking any treatment, please tick this box <input type="checkbox"/>)</small>	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>	b. Ways to adjust your own treatment	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>
2 Over the past 2 weeks, have your bowel symptoms been getting worse, getting better or not changed?				5 How would you rate the OVERALL control of your IBD in the past two weeks?			
	Better <input type="checkbox"/>	No change <input type="checkbox"/>	Worse <input type="checkbox"/>	Please draw a vertical line () on the scale below			
3 In the past 2 weeks, did you:							
a. Miss any planned activities because of IBD? <small>(e.g. attending school/college, going to work or a social event)</small>	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>				
b. Wake up at night because of symptoms of IBD?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>				
c. Suffer from significant pain or discomfort?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>				
d. Often feel lacking in energy (fatigued) <small>(by 'often' we mean more than half of the time)</small>	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>				
e. Feel anxious or depressed because of your IBD?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>				
f. Think you needed a change to your treatment?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not sure <input type="checkbox"/>				

ICHOM Timeline for Inflammatory Bowel Disease



The Standard Set includes **baseline data** to assess outcomes and perform **risk adjustment for comparability**

Patient Population	Measure Details	Supporting Information
Demographics		
All patients	Year of birth	N/A
	Male or female	
	Education level	Highest level of schooling completed using the International Standard Classification of Education
	Smoking status	(of cigarettes, cigars or tobacco)
	Patient height Patient weight	To calculate BMI
Baseline clinical factors		
All patients	Comorbidities including autoimmune conditions	N/A
	Previous infection	HIV, HBV or TB
Baseline condition factors		
All patients	Diagnosis	Crohn's disease, ulcerative colitis, indeterminate IBD or colitis unclassified
	Date of diagnosis	N/A
	Disease phenotype	Tracked via Montreal Classification
	Presence of extra-intestinal manifestations	Eye, skin, joint, hepatobiliary or other

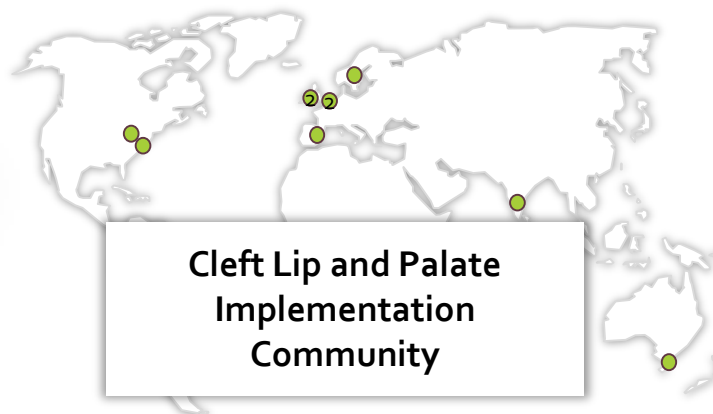
ICHOM is driving implementation
across a number of fronts to
prepare more organisations for
value-based health care

Accelerate with the innovators



- Partner with innovative providers to **push the frontier of outcomes measurement** and pave the way for others to follow

Equip with knowledge and connect to peers



- Provide guidance and action items to **global institutions** implementing Standard Sets **with a goal of benchmarking**

Inspire with success stories



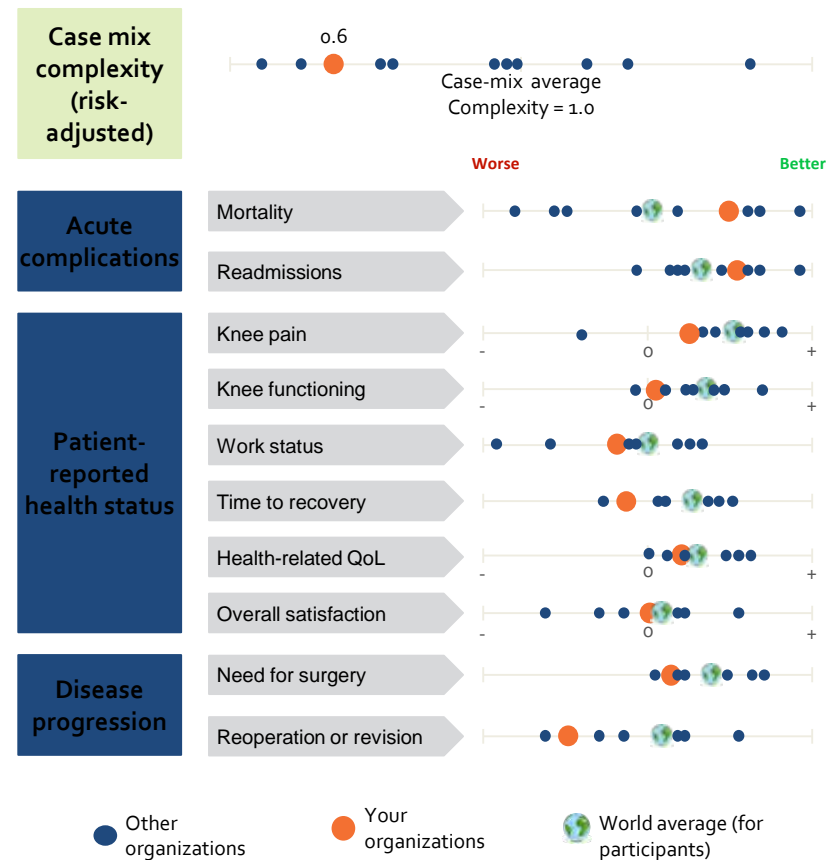
- A collection of testimonials and stories on the **Why, How, and What** of outcome measurement

We have recently launched a global benchmarking program

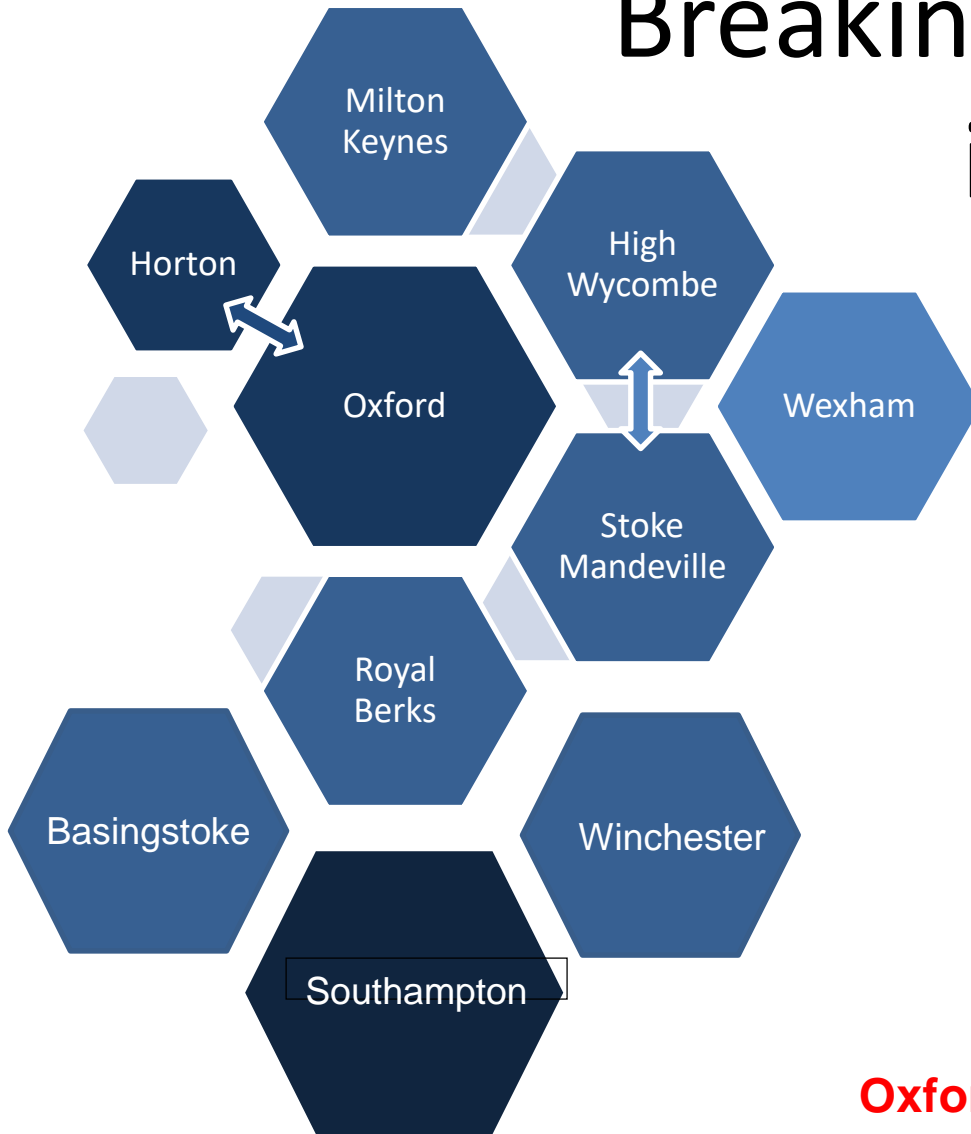
Objectives of Global Comparisons project

- Pool health outcomes data from 10-15 leading provider organizations – 2 conditions for pilot
- Risk-adjust raw data and organize comparisons on key indicators
 - ✓ Particular focus on patient-reported outcomes
- Provide individual – and confidential – reporting to participating organizations
- Identify the “best-in-class” and publish about their performance

Sample output – Hip and Knee



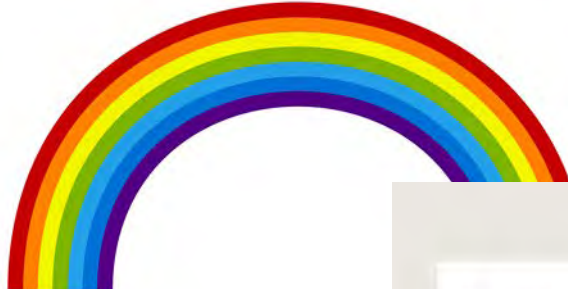
Breaking boundaries in IBD



Oxford
Academic Health
Science Network

Oxford AHSN IBD Network
Funding from Takeda UK, JNJ and
Norman Collison Foundation
Aim to collect ICHOM outcomes for
IBD across the Thames Valley

TrueColours Ulcerative Colitis



Dear Participant,

It's time to update your TrueColours record.
Could you please complete the following questionnaires:

Dashboard Graph Timeline New Contact us Settings Help

Summary

Time Period	SCCAI Score
4th 2015	14
1 Feb	10
8 Feb	5

3 MONTHS 1 YEAR ALL

SCORES NOTES KEY

SUMMARY GRAPH

- CUCQ8 OFF
- SCCAI ON
- Scale to fit OFF
- Separate summary graphs ON
- Legend ON
- From [] to []

SYMPTOMS GRAPH

- CUCQ8 ON
- Disease Activity - SCCAI ON

QUALITY OF LIFE (EQ-5D)

- Quality of Life (EQ-5D) ON
- Quality of Life (EQ-5D) ON

[Print graphs](#)

 **ICHOM**
Patient recorded
outcome
measures

Questionnaires [Notes](#) [Contact us](#) [Settings](#) [Timeline](#) [Help](#)

Bowel frequency (night)

nil

1-3

4-6

[Next step →](#)

weekly questions. Choose some questions from our selection, or use

Latest Score

TODAY'S SCORE

6

SCCAI

It looks as though your colitis is active

[Summary graph](#)

Topical therapies:

This is an ideal time to focus on topical therapies. Start mesalazine suppositories 1 gram each night for 3 weeks.

If bleeding persists for more than 10 days after this, or if there is deterioration, then please contact your specialist team (link to phone or email). The aim is to get you into the GREEN zone, and if symptoms are improving, please continue the above treatment.

Prednisolone:

If you are on oral prednisolone please follow your specialist team's instructions regarding the appropriate weaning protocol. Please do not start prednisolone without first speaking to your specialist team.

Other therapies:

Please continue all other prescribed ulcerative colitis medications and do not change any of these doses without consultation from your medical team. These medications will help you to enter the GREEN zone.

the examples to make up your own, since you have chosen some questions, you can choose when you are to receive prompts.

You can choose up to 10 questions to respond to daily, and up to 10 to respond to weekly.

Daily questions

Your questions:

You have not yet added any questions. Click the button below to add your first question.

[Add a question →](#)

[Return to your questionnaires](#)

Weekly questions

Your questions:

You have not yet added any questions. Click the button below to add your first question.

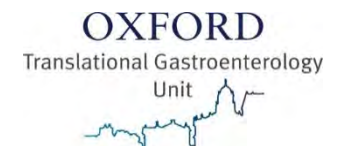
[Add a question →](#)

TrueColours outcome data collection

- Quality of life (IBD Control)
- Disease activity (Manitoba index, 0-5 point scale)
- Steroids within past 12 months
- ED visit
- Hospital admission ≥ 1 night (duration)
- Nutrition (BMI and change in weight)
- Anaemia
- Complications
 - Therapy (medical/endoscopic/surgical)
 - Cancer
 - Death



Patient recorded outcome



What do we need now?

- Secure global funding for ICHOM implementation
 - \$200k from Takeda, Ferring, +/- Celgene
- **OUHFT** to be one of two implementation sites
 - The other is likely to be Leuven
 - Worth speaking to Aneurin Bevan Health Board (done it for Parkinson's)
- **OUHFT** to work with ICHOM implementation team
 - Adapt ePR to collect ICHOM data (eg Hb, admissions etc)
 - Enable downloading of TrueColours data to ePR (patient portals – similar to Cleveland Clinic)
 - Allow de-itemised (anonymised) data from patients to be stored in a secure cloud
- Consider implementing other ICHOM standard sets – hip and knee, prostate cancer, dementia, etc

Are we better than, as good as, or worse than others?



Precision medicine approach to Asthma diagnosis and management

Driving the adoption of Fractional exhaled Nitric Oxide testing in Primary care

Prof Ian Pavord
University of Oxford,
Honorary Consultant Physician, University of Oxford Hospitals

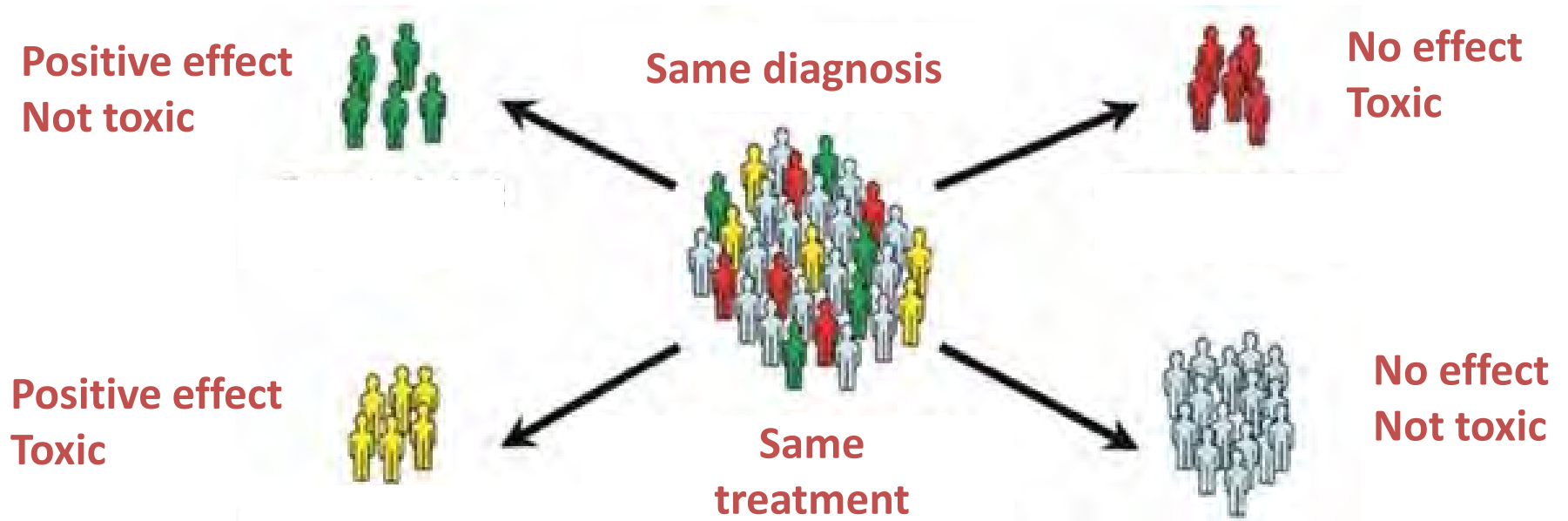
Time to reform taxonomy of chronic disease

Many common human diseases are still diagnosed as if they are homogeneous entities, using criteria that have hardly changed in a century...

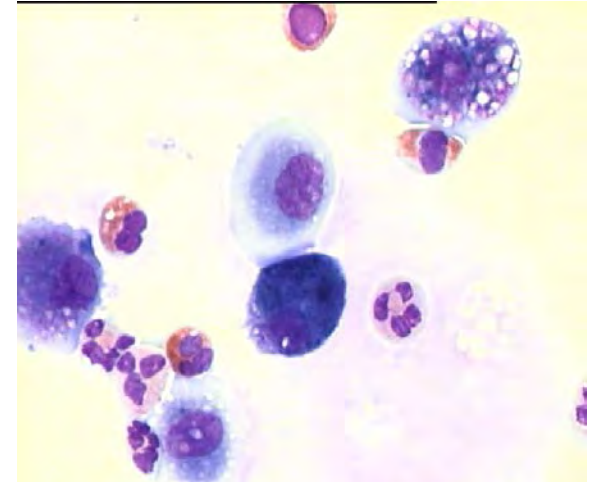
...the treatment for diseases that are diagnosed in this way is generic, with empiricism as its cornerstone

[Kola and Bell. Nature Reviews \(drug discovery\) 2011;10:641-2](#)

Precision Medicine Approach



New insights from novel assessment techniques



Cells

Eosinophils
Neutrophils
Macrophages
Lymphocytes
Epithelial cells

Effector mediators

LTC/D/E4
PGD2
Histamine

Cellular markers

ECP
Neutrophil elastase

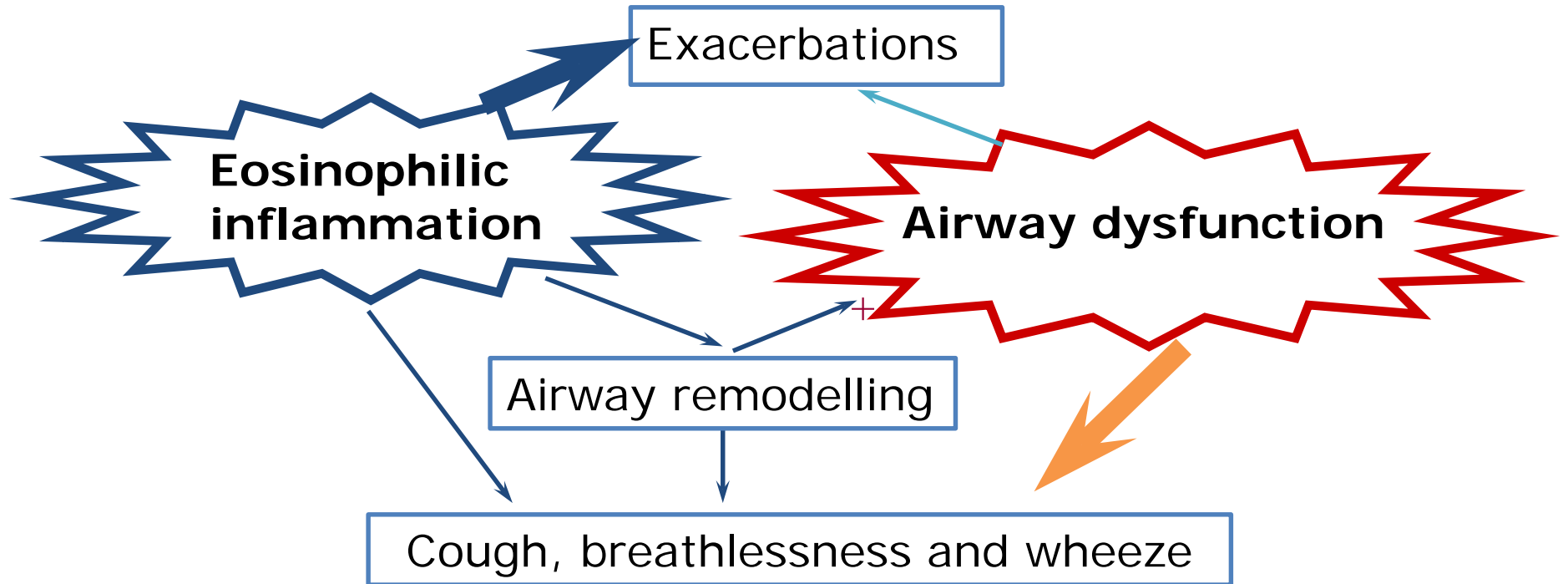
Cytokines

IL-8

What we have learnt from studying airway inflammation

- Eosinophilic airway inflammation is present in 50-60% of patients with asthma and 30-40% of patients with COPD
- The presence and severity of eosinophilic airway inflammation is not associated with symptoms or abnormalities of lung function
- Eosinophilic airway inflammation is associated with an increased risk of severe attacks
- Patients with eosinophilic airway inflammation respond well to inhaled and oral steroids; those without do not
- The major benefit of control of eosinophilic airway inflammation is a reduced risk of attacks

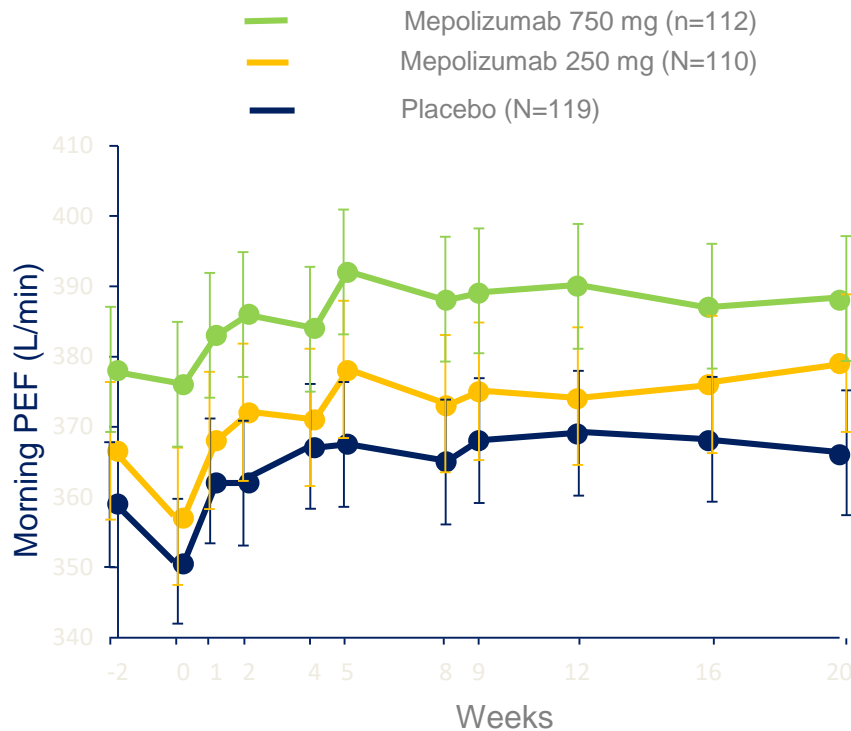
Need to differentiate between airway inflammation and dysfunction



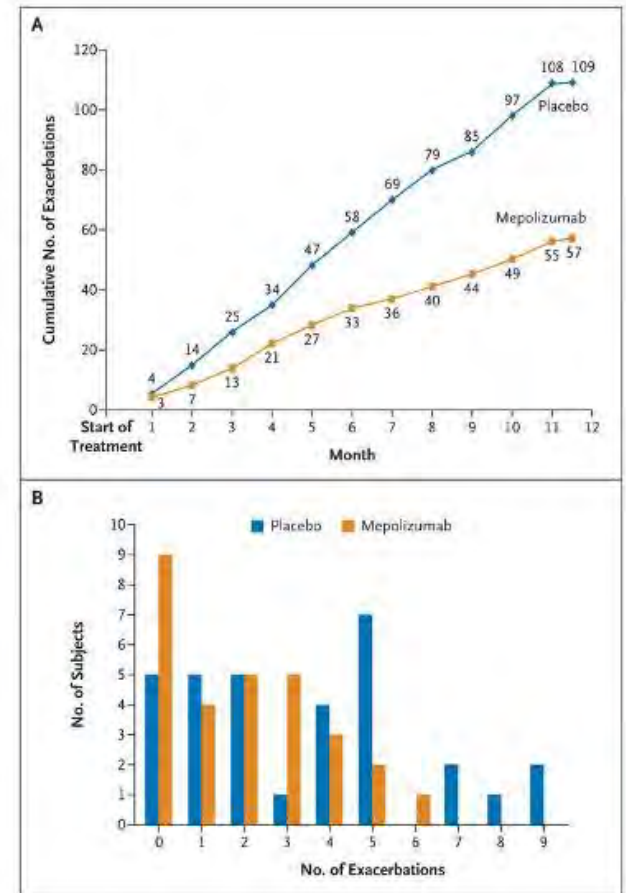
Barriers to uptake of biomarker directed, phenotype specific management

1. Traditional disease labels and guidelines are deeply embedded
2. The validity and feasibility of assessing airway inflammation using induced sputum is not widely accepted
3. Industry not engaged

Mepolizumab (anti-IL-5): effect in 'asthma' and eosinophilic airways disease management



Flood-Page et al. AJRCCM 2007;176:1062-71



Haldar et al. NEJM 2009;360:973-84

GSK announces outcome of US FDA Advisory Committee recommending approval of mepolizumab for the treatment of adults with severe asthma

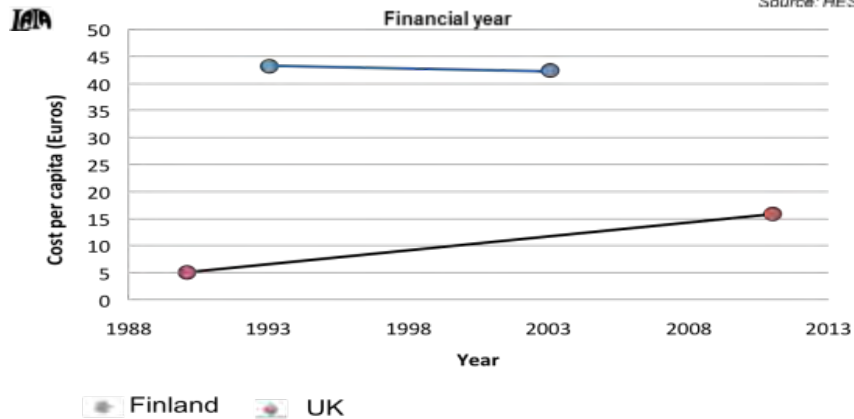
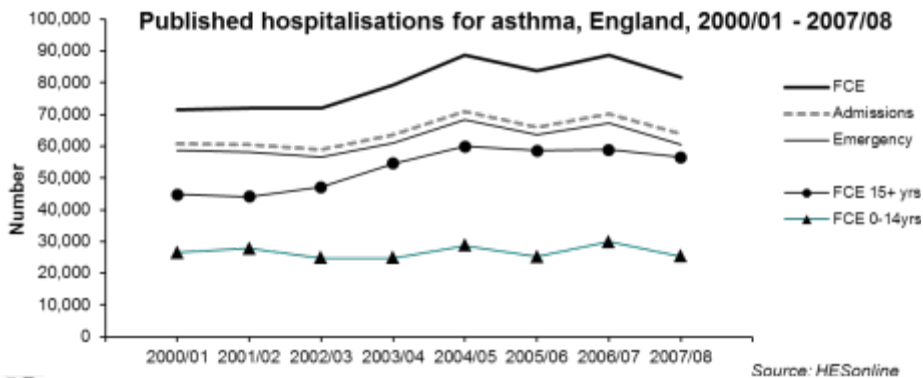
11 June 2015

Issued: London UK

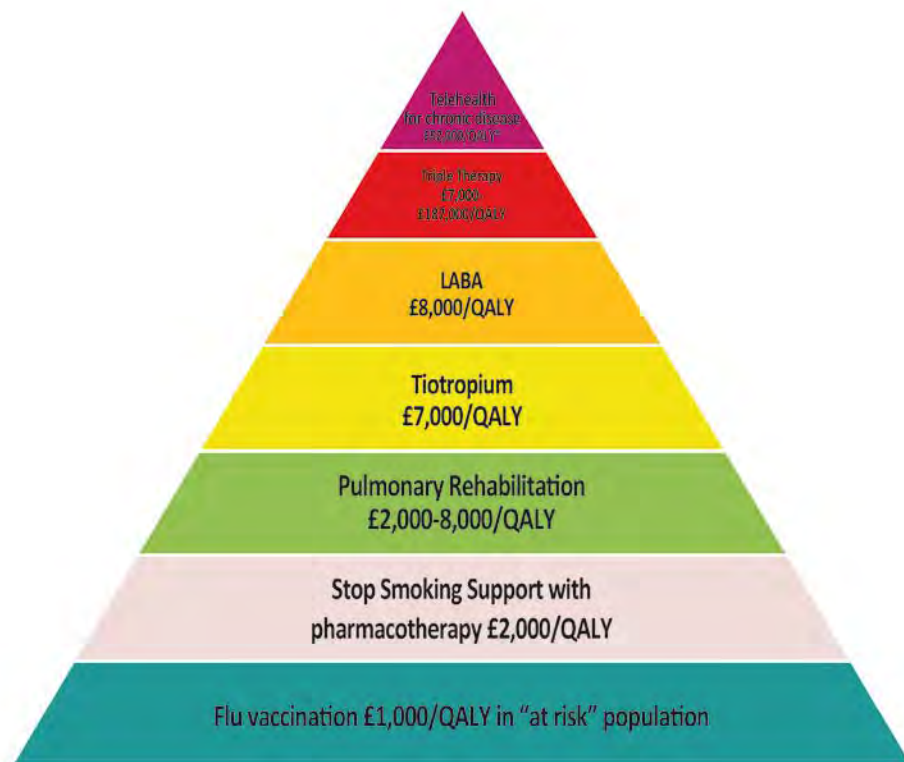
GlaxoSmithKline plc (LSE: GSK) today announced the outcome of the meeting of the Pulmonary Allergy Drugs Advisory Committee of the United States (US) Food and Drug Administration (FDA) regarding the Biologics Licence Application (BLA) for mepolizumab as an add-on maintenance treatment for severe asthma with eosinophilic inflammation.

Concern about stalling of outcomes

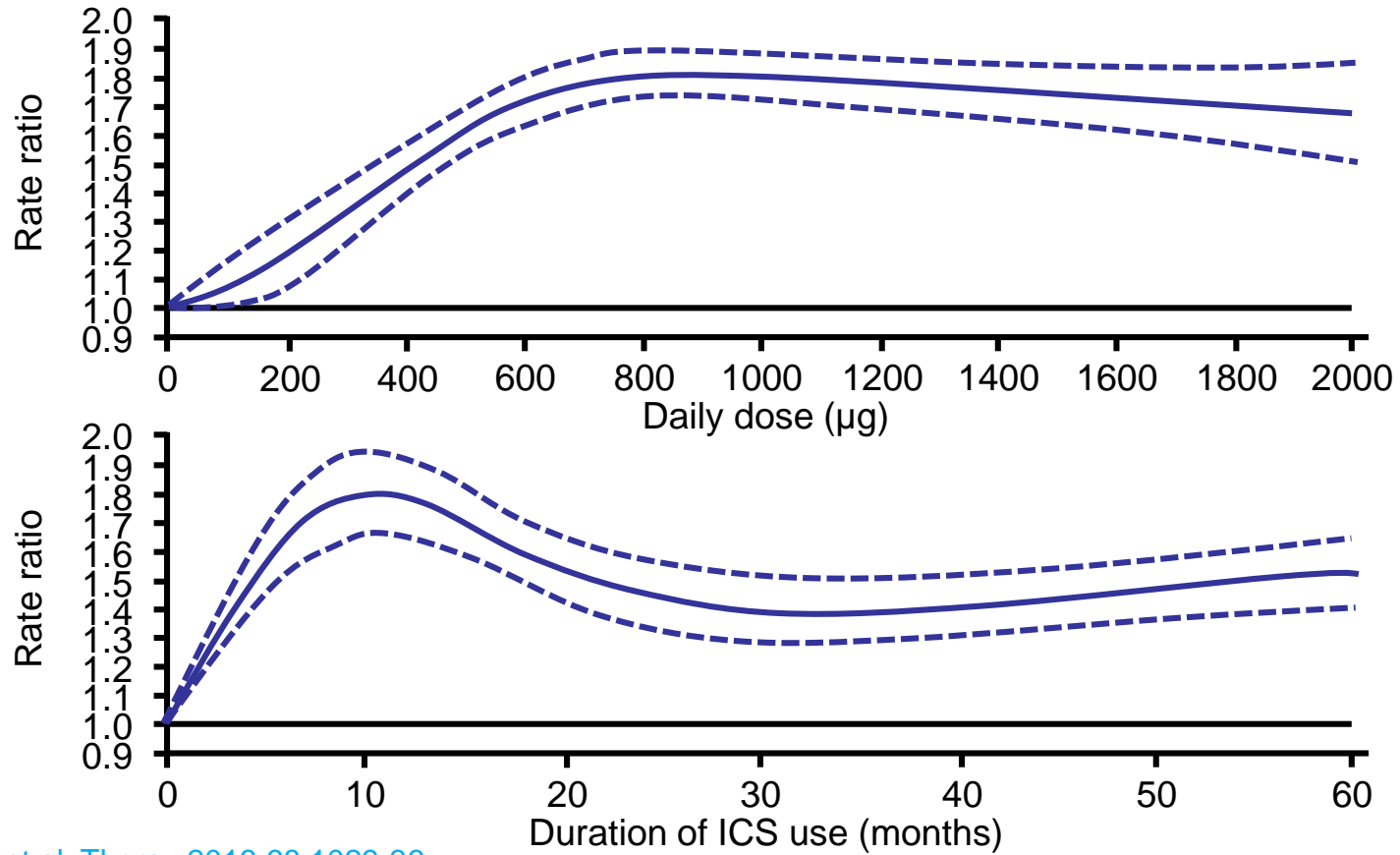
Asthma



COPD



Increasing recognition of adverse effects



Simple biomarker diagnostics now accessible



**FeNO TESTING NOW
QUICK AND EASY**



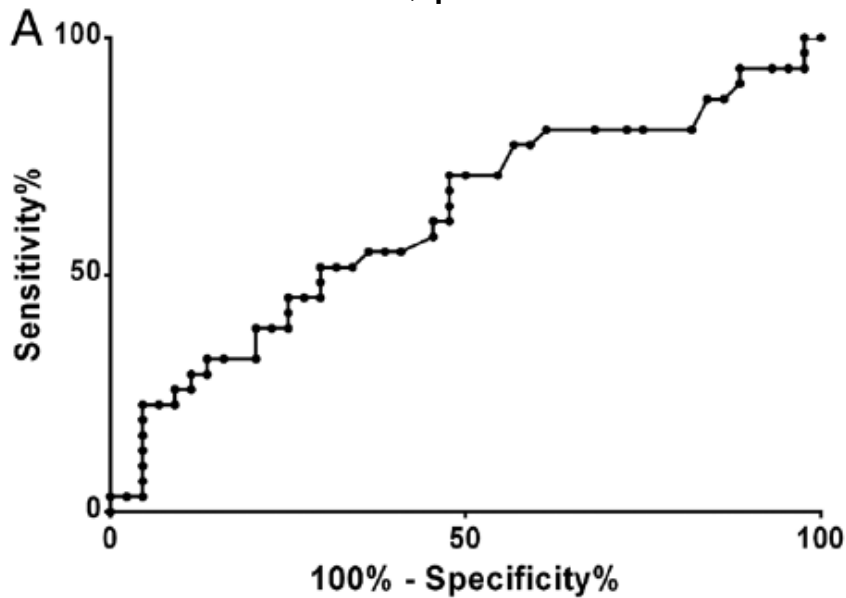
**Fractional Exhaled
NO (FeNO) testing**

- Easy to measure
- Acceptable to patients
- Immediate result
- Easy to obtain accurate results, even in children

Simple biomarker diagnostics now accessible

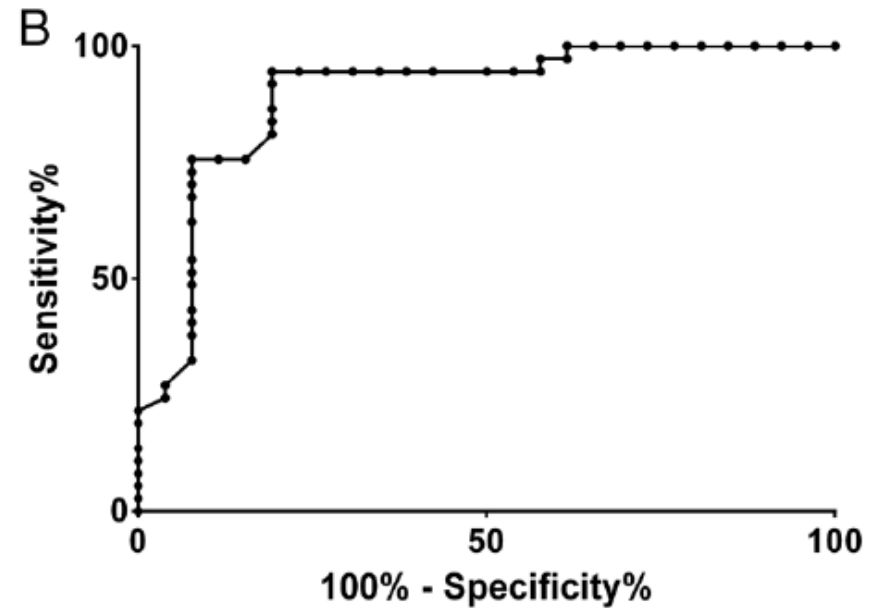
Asthma

ROC 0.62; $p=0.09$



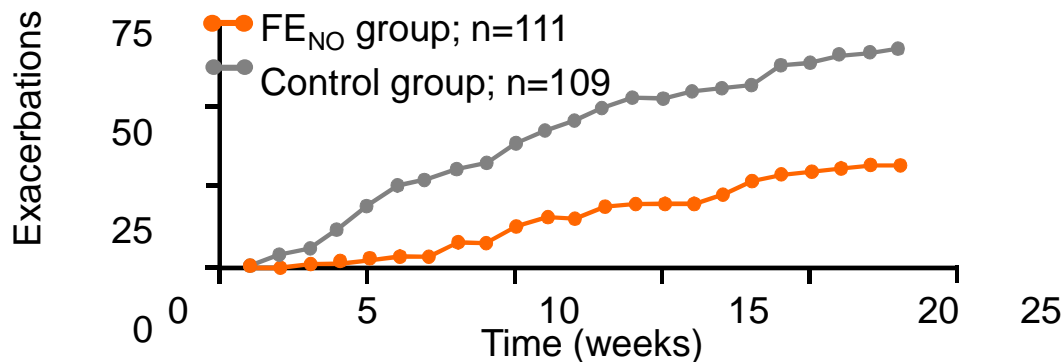
ICS responsive airway disease

ROC 0.89; $p<0.0001$



FeNO to guide ICS treatment in pregnant women with asthma

Number of exacerbations

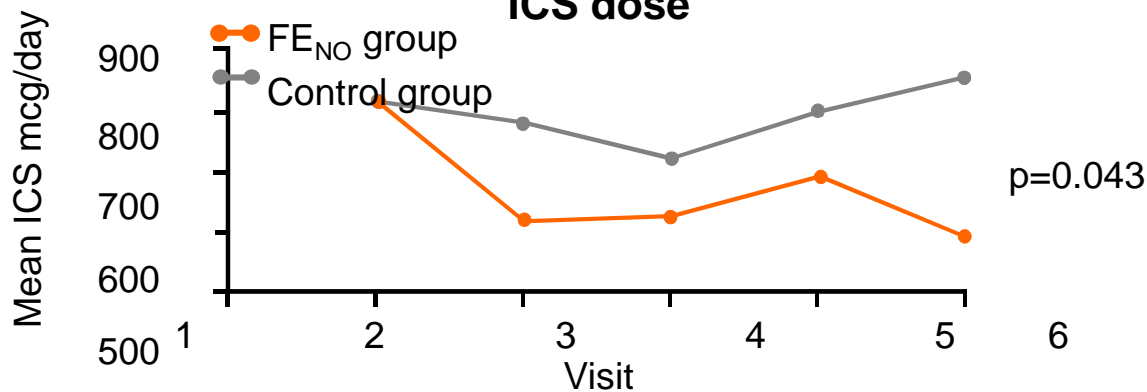


p<0.001

0.62 attacks/patient/pregnancy
16.5% neonatal hospitalisation

0.29 attacks/patient/pregnancy
7.6% neonatal hospitalisation

ICS dose



p=0.043

What are we doing as part of the Oxford AHSN?

- Can we use FeNO and blood eosinophils to guide management in ordinary clinical practice and does this improve outcomes?
 - FeNO based diagnosis
 - Primary and secondary care based management of acute wheezing illnesses
 - Long-term use of inhaled steroids in asthma and COPD (i.e. can we withdraw high dose steroids in patients with low biomarkers)
 - The enigma of 'mild' episodic asthma

What are we doing as part of the Oxford AHSN?

- Regional CCGS will identify key test practices to demonstrate the Proof of Concept of FeNO testing
- Outcomes around patient healthcare visits (exacerbations) and medication usage (Inhaled corticosteroids) will be recorded

Phase 1

Evaluation of FeNO testing in primary care at key practices in region

Phase 2

Dissemination of FeNO testing across Oxford AHSN region

- A dissemination pack for national adoption will be developed
- Oxford AHSN will engage other AHSNs as well to spread tools and resources nationally

Phase 3

Capturing learning and processes to scale dissemination nationally through other AHSNs

- Outcomes data will be used to make the case for CCG investment in FeNO equipment and consumables across the locality
- Data collected on effectiveness of implementation analysed (health economics/stats)

For more Info

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