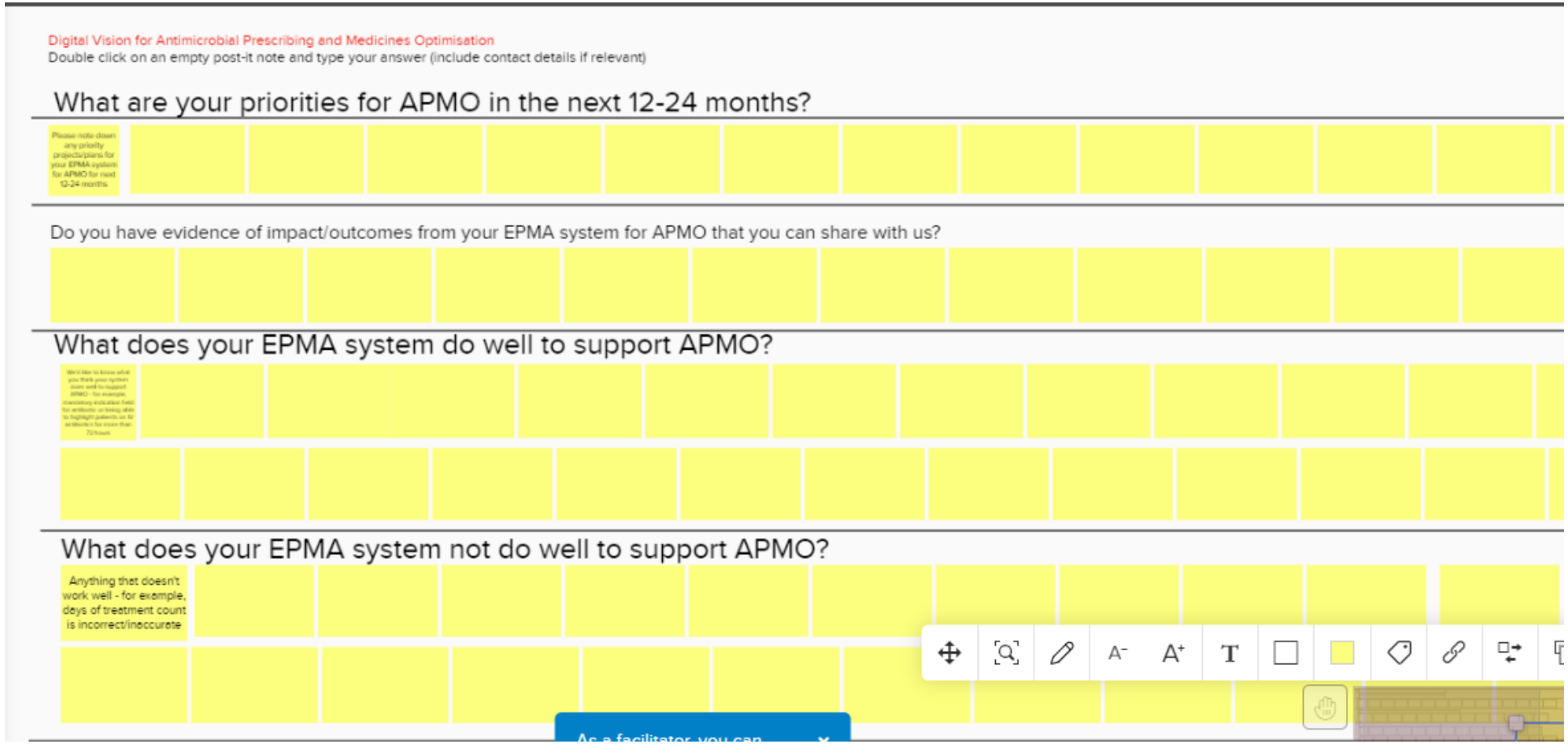
Transforming Lives with Digital Medicines

Digital Vision for Antimicrobial Prescribing & Medicines Optimisation

NHS England and NHS Improvement

Digital Vision for APMO Mural Networking Board

Link here



Slido question – what EPMA system are you using/will be using in the future?

- https://app.sli.do/event/a3Pj8FJqqGaSTp1TMKmFyL
- Event code #761014

AMR – the “silent pandemic”

Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis

*Antimicrobial Resistance Collaborators**

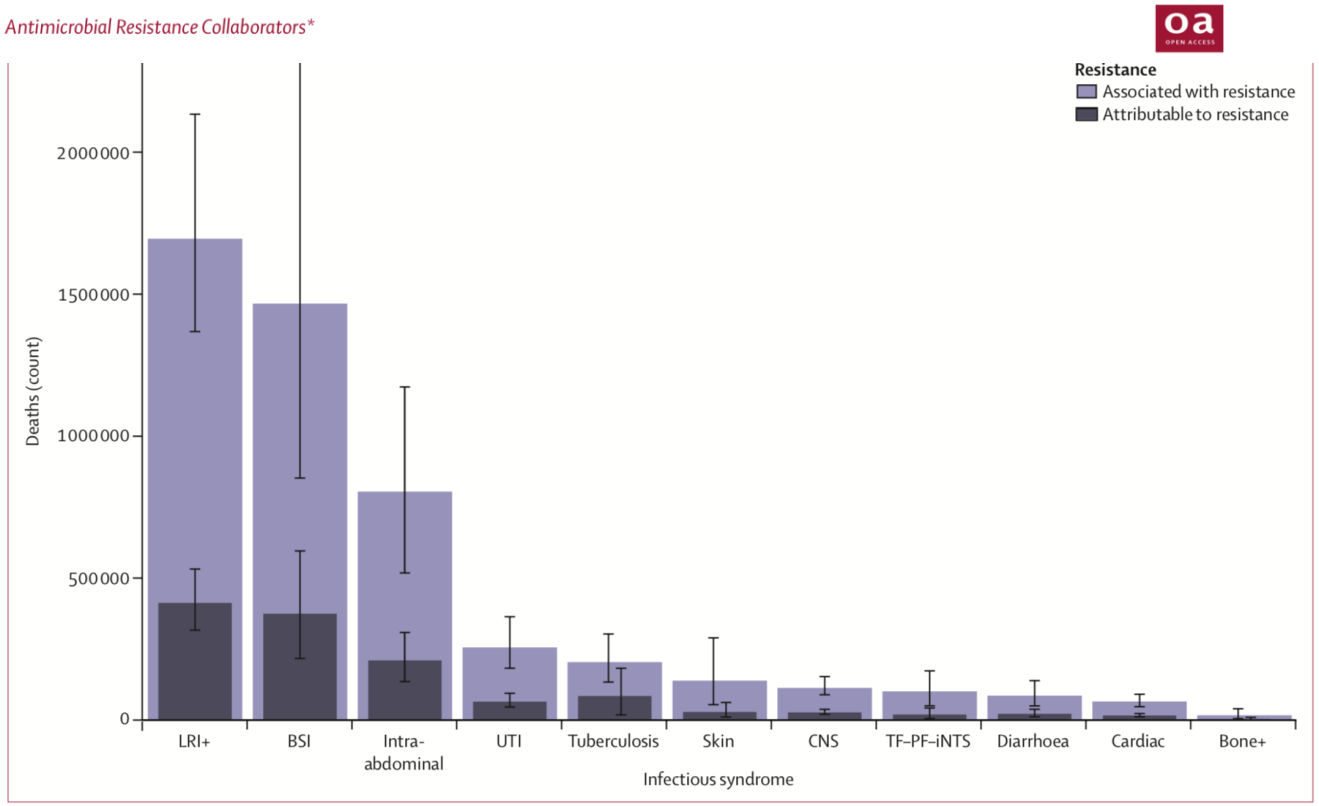
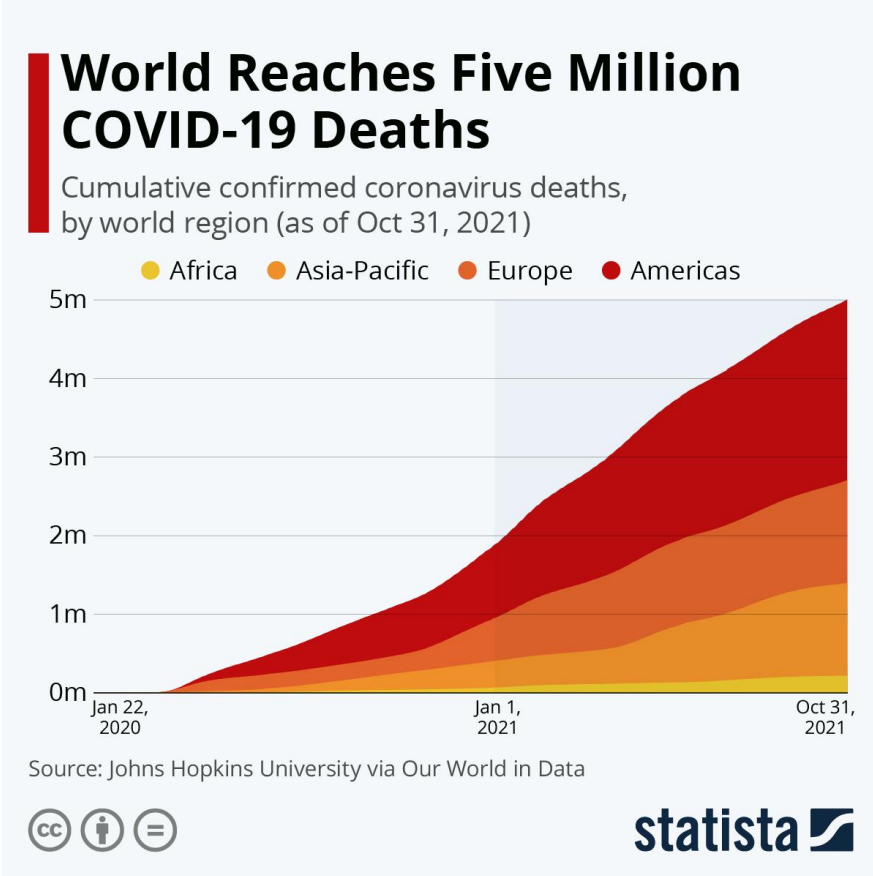


Figure 3: **Global deaths (counts) attributable to and associated with bacterial antimicrobial resistance by infectious syndrome, 2019**
Estimates were aggregated across drugs, accounting for the co-occurrence of resistance to multiple drugs. Error bars show 95% uncertainty intervals. Does not include gonorrhoea and chlamydia because we did not estimate the fatal burden of this infectious syndrome. Bone+=infections of bones, joints, and related organs. BSI=bloodstream infections. Cardiac=endocarditis and other cardiac infections. CNS=meningitis and other bacterial CNS infections. Intra-abdominal=peritoneal and intra-abdominal infections. LRI+=lower respiratory infections and all related infections in the thorax. Skin=bacterial infections of the skin and subcutaneous systems. TF–PF–iNTS= typhoid fever, paratyphoid fever, and invasive non-typhoidal *Salmonella* spp. UTI=urinary tract infections and pyelonephritis.

Estimated 4·95 million (3·62–6·57) deaths associated with bacterial AMR in 2019,

including 1·27 million (95% UI 0·911–1·71) deaths attributable to bacterial AMR.



https://doi.org/10.1016/S0140-6736(21)02724-0

What is Antimicrobial Stewardship?

- **Antimicrobial stewardship (AMS):** A coherent set of actions which promote the responsible use of antimicrobials. This definition can be applied to actions at the individual level as well as the national and global level, and across human health, animal health and the environment.
- **Antimicrobial stewardship programme (AMS programme):** An organizational or system-wide health-care strategy to promote appropriate use of antimicrobials through the implementation of evidence-based interventions.

Slido – how engaged are you with your APMO team?

- https://app.sli.do/event/a3Pj8FJqqGaSTp1TMKmFyL
- Event code #761014

- APMO = antimicrobial prescribing and medicines optimisation

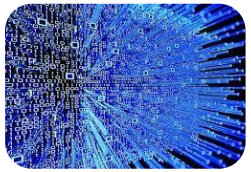
APMO Portfolios and Priorities

Public Engagement

Knowledge mobilisation

Workforce Development

Research



Data and coding

Digital tech / decision support

Diagnostics

Policy & commissioning

Patient Safety

New therapies

Supply Chain

EUCAST dosing

Governance & Regulation

Paediatrics

Sustainability

Dental

IPC and antibiotic avoidance

Community pharmacy

UTI

Gram-negative BSI

OPAT and aseptics

IV-PO switch

Antifungal Stewardship

APMC

Key Priorities Identified:

- Patient empowerment
  - Review of patients with recurrent infection
- Workforce capacity and capability
  - AMS workforce survey and postgraduate training scoping
- Knowledge Mobilisation
  - NICE guideline scope widening to strengthen diagnosis and shared decision-making with decision aids
- Data-driven improvement
  - Routine data implemented at system level

  Performance reports suite and executive dashboard for Regions and ICSs, including Model Health System

  IV-to-oral switch in hospitals and peer comparison

  Shorter course length promotion and peer comparison
- **Digital**

  Digital Vision for decision-support and AMO including EPMA and primary care systems
- Policy, Governance & Regulation

  Regional and ICS Leadership, Strategy & Governance Structures for AMR/AMS, including RMOCs

  AMS assurance framework and toolkit for peer support and CQC inspection

  Supply chain support & stewardship of new antimicrobials

Public Engageme

Patien Safet

Policy & commissioning

Dental

tifungal wardship

Question for audience: priorities for APMO – please put answers on Mural

- Link here:

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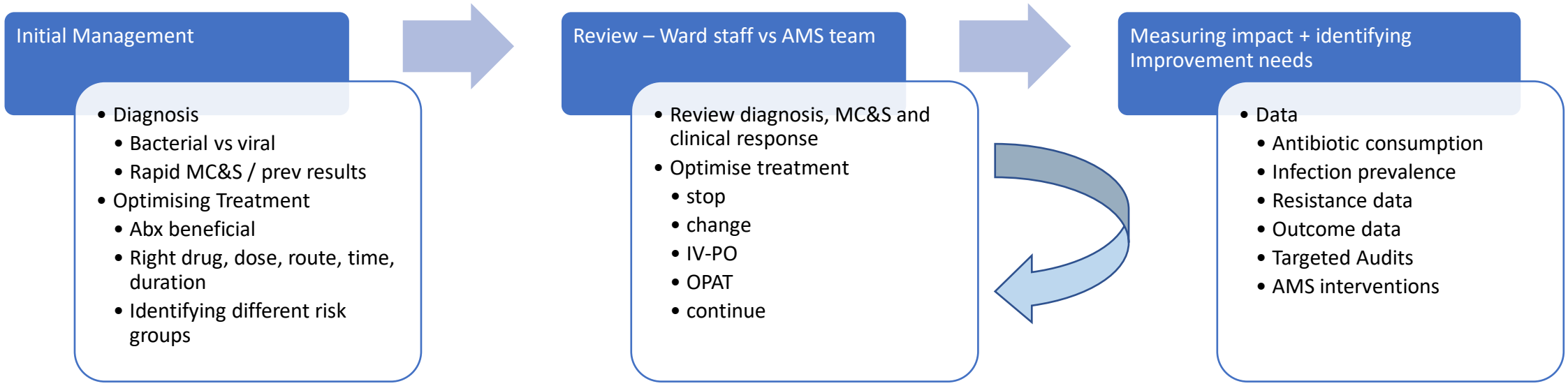
AMS interventions / opportunities



Communication

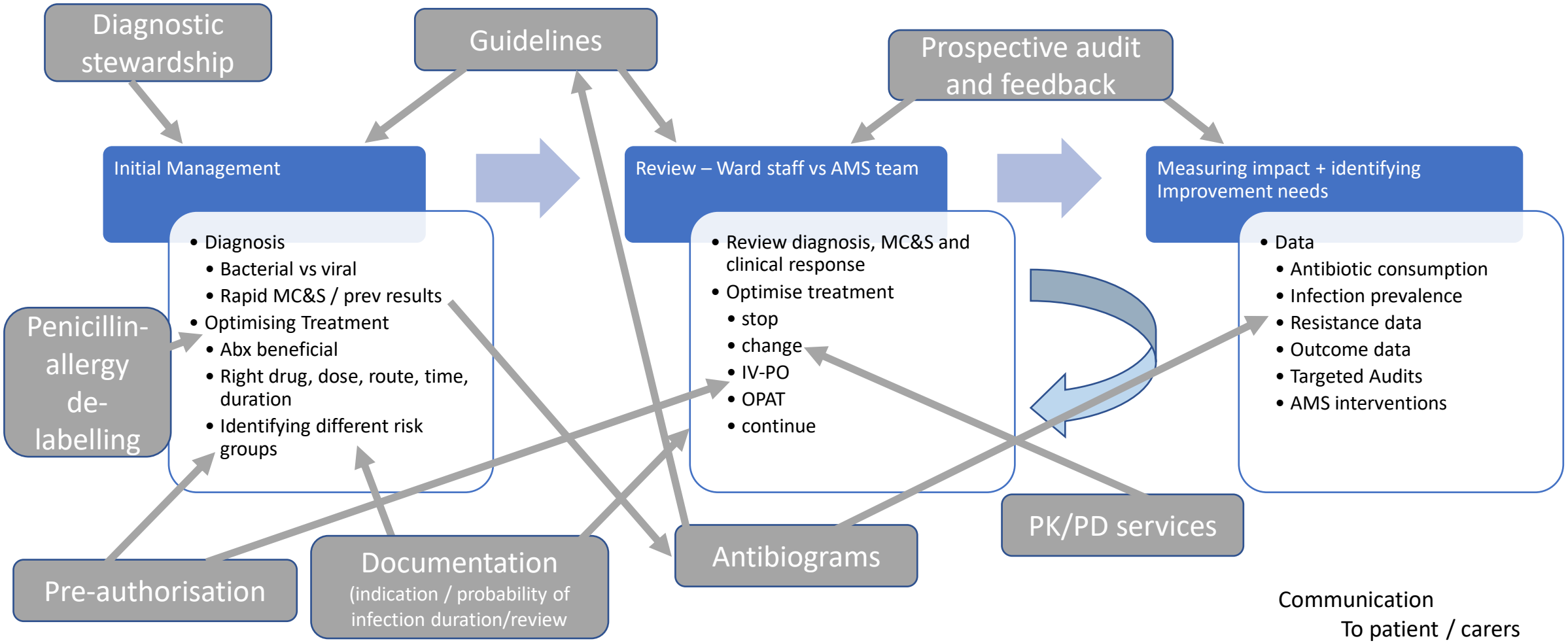
To patient / carers

Between HCPs

Between places of care

Underpinned by governance structures, appropriate resources and supported by education and data sharing

AMS interventions / opportunities



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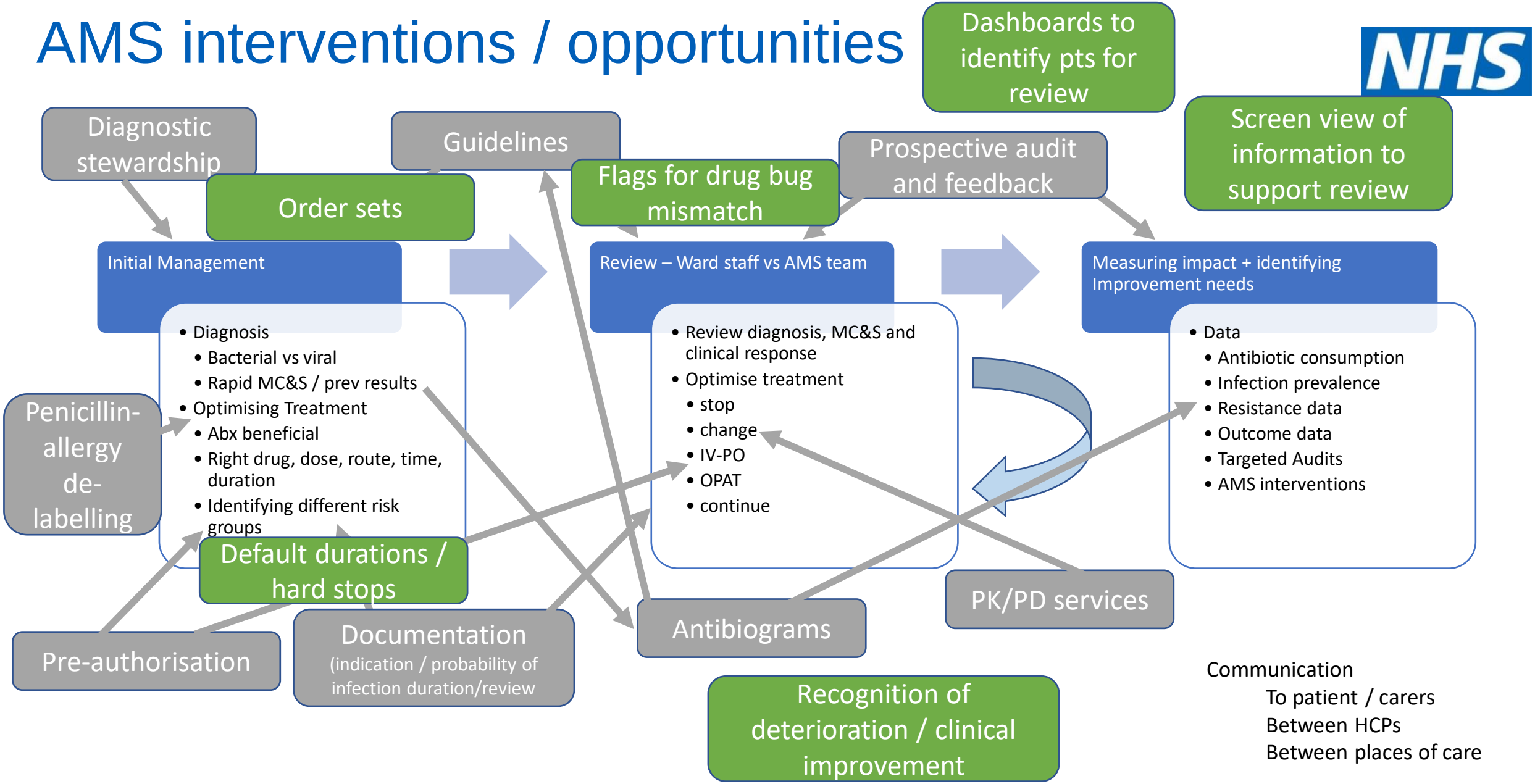

Underpinned by governance structures, appropriate resources and supported by education and data sharing

Secondary care Digital Vision

- Explore the current functionality of existing EPMA systems to support APMO
- Identify any core elements that could be supported across all supplier systems
- Identify gaps in functionality that need to be addressed
- Describe a core list of functionality that all systems should possess to support APMO
- Ensure that APMO is a high profile element of future supplier development of EPMA systems

Examples from the real world and literature

Quick poll - for those with electronic prescribing systems - do you have hard stops?? Thanks 13:00

We have just put in hard stops on Doxy and Levoflox courses only. 13:01

As in automatically defined stop at three days (ARC style wi the need to represcribe) then no, but the course length creates a hard stop at the end and we enforce a duration into all antibiotic prescriptions. 13:02

So kind of. 13:02

We have automatic suspensions of all antibiotic prescription at 72 hours (as per ARK) using a task functionality. No further doses can be given until the task is actioned and the prescription reactivated. Not without its challenges but we have dashboards to highlight patients who's prescription are due to suspend to support staff. 13:06

No, due to risk of accidental stopping causing clinical harm. Im aware of another trust where hard stop translated into large increase in patients not getting manual stops, so increasing average course lengths. 13:58

No. However oral antibiotics are prepopulated with a 5 day course length which can be amended by the prescriber if needed. We encourage Dr's to leave IV abx durations open ended unless there is a clear plan for stop/oral switch due to patient safety incidents. 14:05

All abx have a 5 day stop date automatically, drs can amend this at any point or have no duration.

UK Antimicrobial Pharmacist's National WhatsApp group

Quick poll - for those with electronic prescribing systems - do you have hard stops?? Thanks

13:00

Limiting by antibiotic agent prescribed

We have just put in hard stops on Doxy and Levoflox courses only.

Enforced duration

Actioning a task

No, due to risk of accidental stopping causing clinical harm. Im aware of another trust where hard stop translated into large increase in patients not getting manual stops, so increasing average course lengths.

13:58

Unintended consequence

No. However oral antibiotics are prepopulated with a 5 day course length which can be amended by

Limiting route and using pre-populated field

due to patient safety incidents.

14:05

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13:06

Antimicrobial Pharmacist's National WhatsApp group

IV to oral switch

- Canadian community hospital utilising Cerner EPMA system
- Introduced a number measures to improve IVOS
  - Pharmacist led IVOS scheme (Phase 1)
  - Education and revision of IVOS guideline (Phase 2)
  - CDS alert generated and integrated into pharmacists task list (Phase 3)
    - Patient on targeted IV antibiotic, for at least 48 hours
    - No stop date
    - No fever
    - Taking oral diet
- Also monitored IV to oral pantoprazole conversion – no differences seen over time

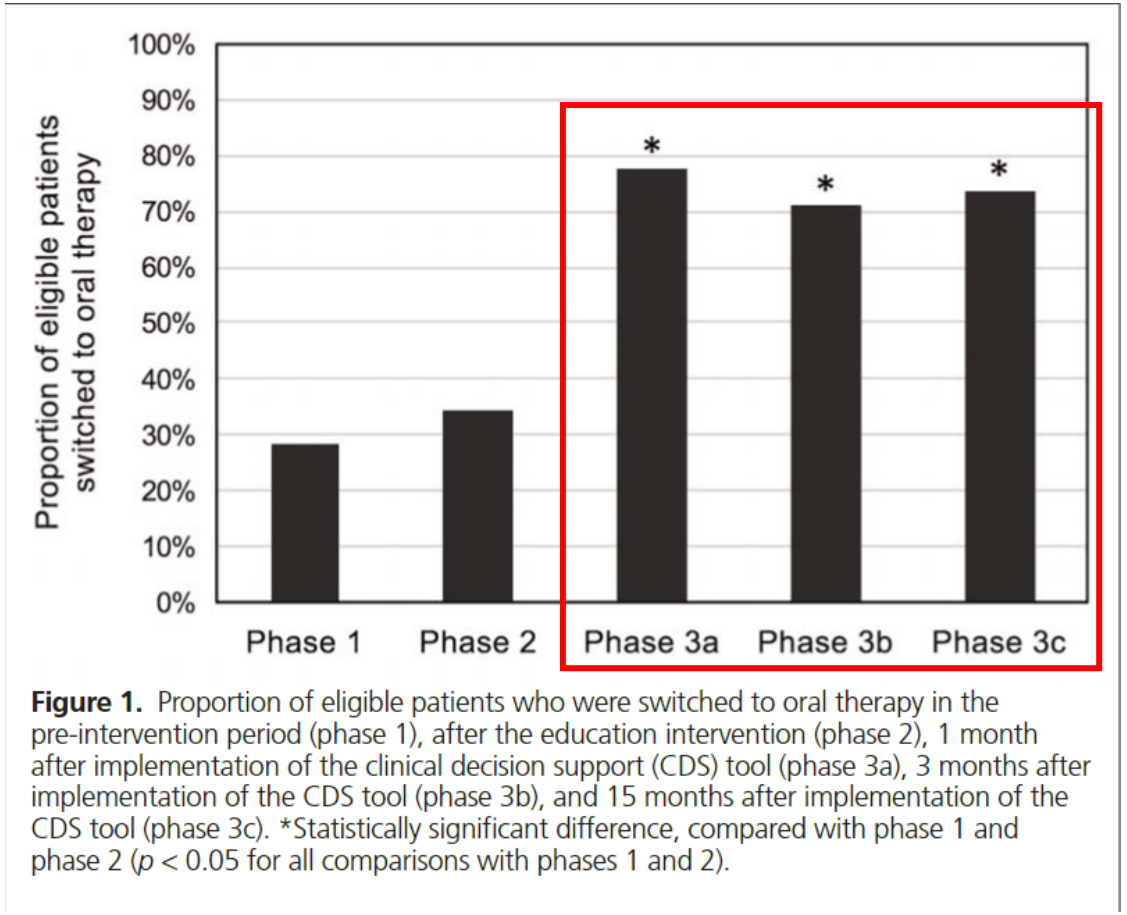

Figure 1. Proportion of eligible patients who were switched to oral therapy in the pre-intervention period (phase 1), after the education intervention (phase 2), 1 month after implementation of the clinical decision support (CDS) tool (phase 3a), 3 months after implementation of the CDS tool (phase 3b), and 15 months after implementation of the CDS tool (phase 3c). *Statistically significant difference, compared with phase 1 and phase 2 ($p < 0.05$ for all comparisons with phases 1 and 2).

Ciarkowski et al. A Pathway for Community-Acquired Pneumonia With Rapid Conversion to Oral Therapy Improves Health Care Value. Open Forum Infect Dis. 2020 Oct 19;7(11):ofaa497.

Escalation/de-escalation of therapy

- Cleveland Clinic, 1400 bed tertiary academic hospital
- TheraDoc CDSS system utilising 15 pre-built or customised alerts for pharmacists
- 1 month evaluation phase either side of implementation
- 577 patients and 749 included alerts
- 90% alerts were for escalation/de-escalation
  - 35% deemed to be actionable (post-intervention)
  - ~70% success rate in interventions accepted
- Median time to de-escalation reduced from 28 hours pre-implementation to 4.7 hours post-implementation (p<0.001)
- Median time for escalation reduced from 7.2 to 5.4 hours (p<0.016)

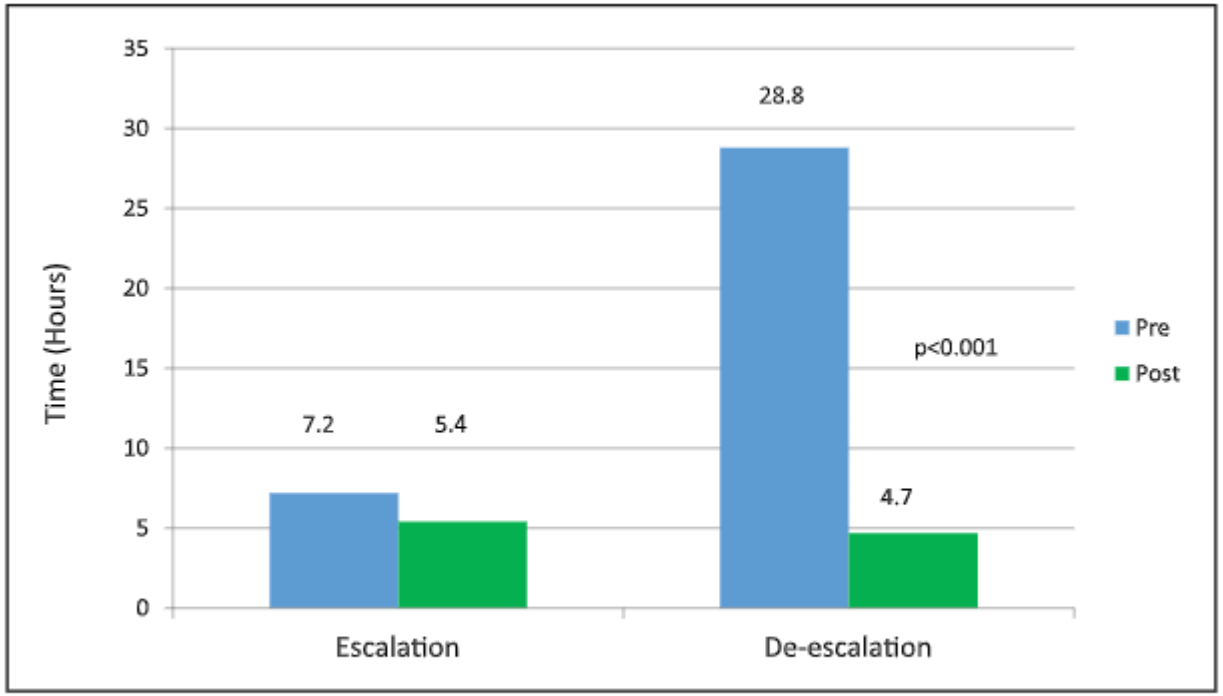

Figure 1. Time to escalation or de-escalation of therapy.

Q. What does your EPMA system do well, badly, not at all?

- Please visit the Mural board or type in the chat

- https://app.mural.co/t/antimicrobialprescribingmedi6921/m/antimicrobialprescribingmedi6921/1651043581977/318cb9b534712c906e21407bed4e897332101d13?sender=u3026662521f50c0352f29976

Q. Workarounds utilised to overcome EPMA shortcomings

- Please visit the Mural board or type in the chat to provide some information

- https://app.mural.co/t/antimicrobialprescribingmedi6921/m/antimicrobialprescribingmedi6921/1651043581977/318cb9b534712c906e21407bed4e897332101d13?sender=u3026662521f50c0352f29976

Q. Evidence of impact/outcomes you can share with us

- Please visit the Mural board or type in the chat

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Thank you

- Please feel free to get in touch with us to discuss further:

- Laura Whitney – l.whitney@nhs.net @LauraWhitneyAMS
- Conor Jamieson – conor.jamieson@nhs.net @jamiesonce