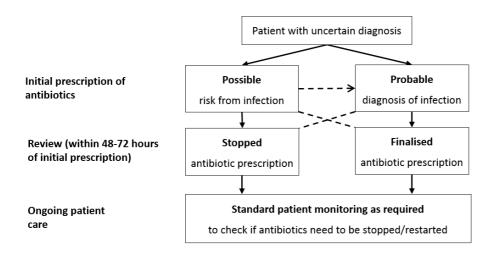
## **Supplementary materials**



Supplementary Figure 1: The ARK Decision Aid (modified from (M. Santillo, K. Sivyer, A. Krusche, F. Mowbray, N. Jones, T E.A. Peto, A. S. Walker, M. J. Llewelyn, L. Yardley, submitted)

From Joining ARK Programme	Preparation	Start thinking about the implementation and identify the ARK Core Team	Phase 1	□ ARK Champion: Go through ARK online tool & resources □ ARK Champion: Sign-up to ARK Champions' Network □ ARK Champion: Identify relevant local structures & procedures □ ARK Champion: Obtain board level support □ ARK Champion: Identify & recruit members of ARK Core Team
- 3 months	Planning and Piloting	ARK core team meet and plan the start of the implementation	Phase 2	□ ARK Champion: Get access to online tool & resources for ARK Core Team □ ARK Champion: Organise initial planning meeting □ ARK Core Team: Go through ARK online tool & resources □ ARK Champion & Core Team: Have initial planning meeting □ ARK Champion & Core Team: Pilot local implementation tools/processes □ ARK Champion & Core Team: Get necessary approvals
	Organise Kick-Off	ARK core team identify the wider team and organise the kick-off meetings	Phase 3	☐ ARK Champion & Core Team: Finalise list of key members of the wider clinical team ☐ ARK Champion & Core Team: Organise & publicise kick-off meetings
- 2 weeks –	Get Ready for Implementation	Kick off meetings	Phase 4	☐ ARK Champion & Core Team: Organise completion of ARK online tool ☐ All staff: Go through ARK online tool in time for kick-off meetings ☐ ARK Champion & Core Team: Run kick-off meetings ☐ ARK Champion & Core Team: Organise regular, supportive discussion meetings with clinical team
Week 1	Implementation Starts	<b>Start</b> of the implementation	Phase 5	$\square$ All staff: Start implementation (from planned implementation date)
Ongoing -	Ongoing Implementation	Monitoring and regular discussion of the implementation	Phase 6	<ul> <li>□ ARK Champion &amp; Core Team: Undertake data collection on implementation of ARK</li> <li>□ All staff: Undertake regular, supportive discussion of the implementation of ARK (based on latest monitoring data)</li> <li>□ ARK Champion &amp; Core Team: Facilitate ongoing implementation of ARK</li> </ul>
Post implementation	Long-Term Sustainability	Ensure long-term sustainability and championship of ARK	Phase 7	☐ ARK Champion & Core Team: Ensure new staff train in ARK ☐ All staff: Continue to apply the Decision Aid categories at prescription ☐ All staff: Maintain processes for ongoing data collection and discussion with wider clinical team

Supplementary Figure 2. Summary of the ARK intervention phases of implementation

## ACUTE ANTIMICROBIAL PRESCRIPTIONS

PRESCRIPTION			Infection is <b>not</b> the most likely = Infection is the most likely dia						
DRUG (APPROVED NAME)		Dose	Notes		Circle administration times or write preferred alternative		Date & Administration		
								REVISE (TICK)	
Prescriber Name Start Date		Route		06 00	.00			Stop □	
				08 00	:00			The state of the s	
Prescriber Signature Bleep		Frequency	Pharmacy Supply	12 00	-00			Continue:	
				14 00	0.0			IV to oral □	
Category of Initial Prescription			Indication	18 00	0.0			Switch	
CIRCLE ->	POSSIBLE	PROBABLE		22 00	-00			OPAT 🗆	
OINOLL >				Pharmacis	st check			No change □	
DRUG (APPROVED NAME)		Doşe	Notes	times or writ	Circle administration times or write oreferred alternative		Date & Administration		
Prescriber Name Star	Start Date	Start Date Route		06 00	60			Stop 🗆	
				08 00	.60				
Prescriber Signature Ble	Bleep	Frequency	Pharmacy Supply	12 00	10.0			Continue:	
				14 00	0.0			IV to oral □	
Calegory of Initial Prescription			Indication	18 00	60			Switch	
CIRCLE →	POSSIBLE	PROBABLE		22 00	0.0			OPAT 🗆	
CIRCLE >				Pharmaci	st check			No change □	
DRUG (APPROVED NAME)		Dose	Notes		Circle administration times or write preferred alternative		Date & Administration		
								REVISE (TICK	
Prescriber Name	Start Date	Route		06 00	(00)			Stop	
1				08 00	0.0				
Prescriber Signature	escriber Signature Bleep Frequency		Pharmacy Supply	12 00	0.0			Continue:	
				14 00	90			IV to oral □	
Category of Initial Prescription			Indication	18 00	20			Switch	
CIRCLE →	POSSIBLE	PROBABLE		22 00	CED			OPAT 🗆	
Ontone y			8.5	Pharmaci	st check			No change	

FINALISED ANTIBIOTIC PRESCRIPTIONS made at Review and Revise				N = After observation is made					ecialist input a	final
DRUG (APPROVED NAME)		Dose	New dose	Date	Circle administration times or write preferred alternative		Date & Admir	istration Record		
Prescriber Name	Start Date	Route	New route	Prescriber Name	06 00	0.0				
					08 00	500				
Prescriber Signature	Bleep	Frequency	Frequency New frequency Presci	Prescriber Signature	12 00	(1)				
					14 00	00				
Indication & Senior/Specialist name		Duration	Pharmacy Supply	macy Supply		CHO				
					22 00	(5)				
						st check				
DRUG (APPROVED NAME)		Dose	New dose	Date	Circle administration times or write preferred alternative		Date & Admir	nistration Record		
Prescriber Name	Start Date	Start Date Route	New route	Prescriber Name	06 00	(00)				
					08 00	100				
Prescriber Signature	Bleep	Bleep Frequency	requency New frequency	Prescriber Signature	12 00	(00)				
					14 00	00				
Indication & Senior/Speciali	st name	Duration	Pharmacy Supply		18 00	00				
					22 00	00				
				Pharmacist check						
DRUG (APPROVED NAME)		Dose	New dose Date		Circle administration		Date & Administration Record			
					times or write preferred alternative					
Prescriber Name	Start Date	Route	New route	Prescriber Name	06 00	800				
					08 00	60				
Prescriber Signature	Bleep	Frequency	Frequency New frequency	Prescriber Signature	12 00	90				
					14 00	00				
Indication & Senior/Specialist name		Duration	Duration Pharmacy Supply		18 00	00				
					22 00	00				
					Pharmaci	ist check				

Supplementary Figure 3. ARK Decision Aid in antibiotic prescribing section of the Trust's drug chart

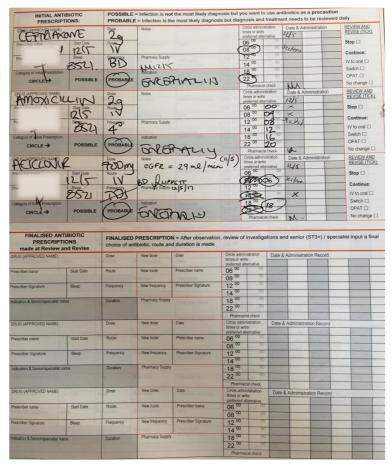
## ARK-Hospital case vignette 1 – General medicine



A 71 yr old female, with a background of epilepsy and alcohol excess, was admitted with confusion following a tonic-clonic seizure. O/E she was tachycardic and agitated but apyrexial with no signs of meningism. Inflammatory markers were normal.

The working diagnosis was a seizure secondary to self-induced alcohol detox. However, due to the confusion and drowsiness antibiotics were started to cover for a **probable** meningo-encephalitis. An LP was performed, which ruled out this diagnosis and antibiotics were stopped within 48 hours.

This prescription would have been better categorised as a **possible** risk of infection since the antibiotics were prescribed overnight, "just in case".



Supplementary Figure 4. Example of a brief case vignette used to reinforce ARK categories





## **BRIEF PATIENT QUESTIONNAIRE**

We are conducting a brief survey to find out what people admitted to hospital, and their relatives/friends, thought about the 'ARK' leaflet you were given about taking antibiotics. If you remember getting this leaflet, we would like to know what you thought about it. Completing the questions below is entirely optional, but will help us find out more about how we could help people taking antibiotics in hospital.

You can also complete the questionnaire online at <hyperlink> from a computer or a smartphone.

Date questionnaire completed:

Who was admitted to hospital: me (person completing the questionnaire)/my partner, friend or relative

NHS Hospital admitted to:

My age (years):

My gender:

Person admitted started antibiotics on: (date)

Person admitted finished (or plan to finish) antibiotics on: (date)

Leaflet satisfaction (please circle one)

The leaflet gave me all the advice I needed	Agree strongly	Agree	Agree slightly	Neutral	Disagree slightly	Disagree	Disagree strongly
The leaflet was helpful to me	Agree strongly	Agree	Agree slightly	Neutral	Disagree slightly	Disagree	Disagree strongly
I felt I could trust the leaflet	Agree strongly	Agree	Agree slightly	Neutral	Disagree slightly	Disagree	Disagree strongly

How likely are you to recommend this leaflet to friends and family taking antibiotics in hospital?	Extremely likely	Likely	Probably	Neither Likely nor unlikely	Probably not	Unlikely	Extremely unlikely
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Any other comments about the leaflet: (free text)

Any other comments about your experience of taking antibiotics in hospital: (free text)