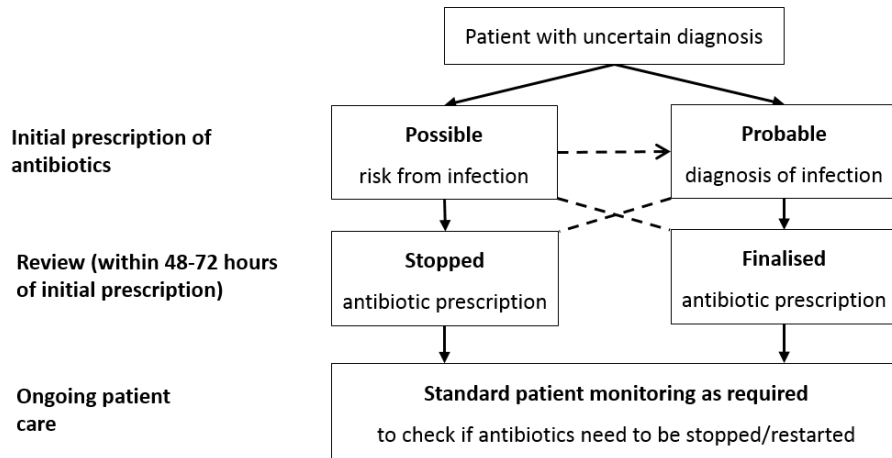
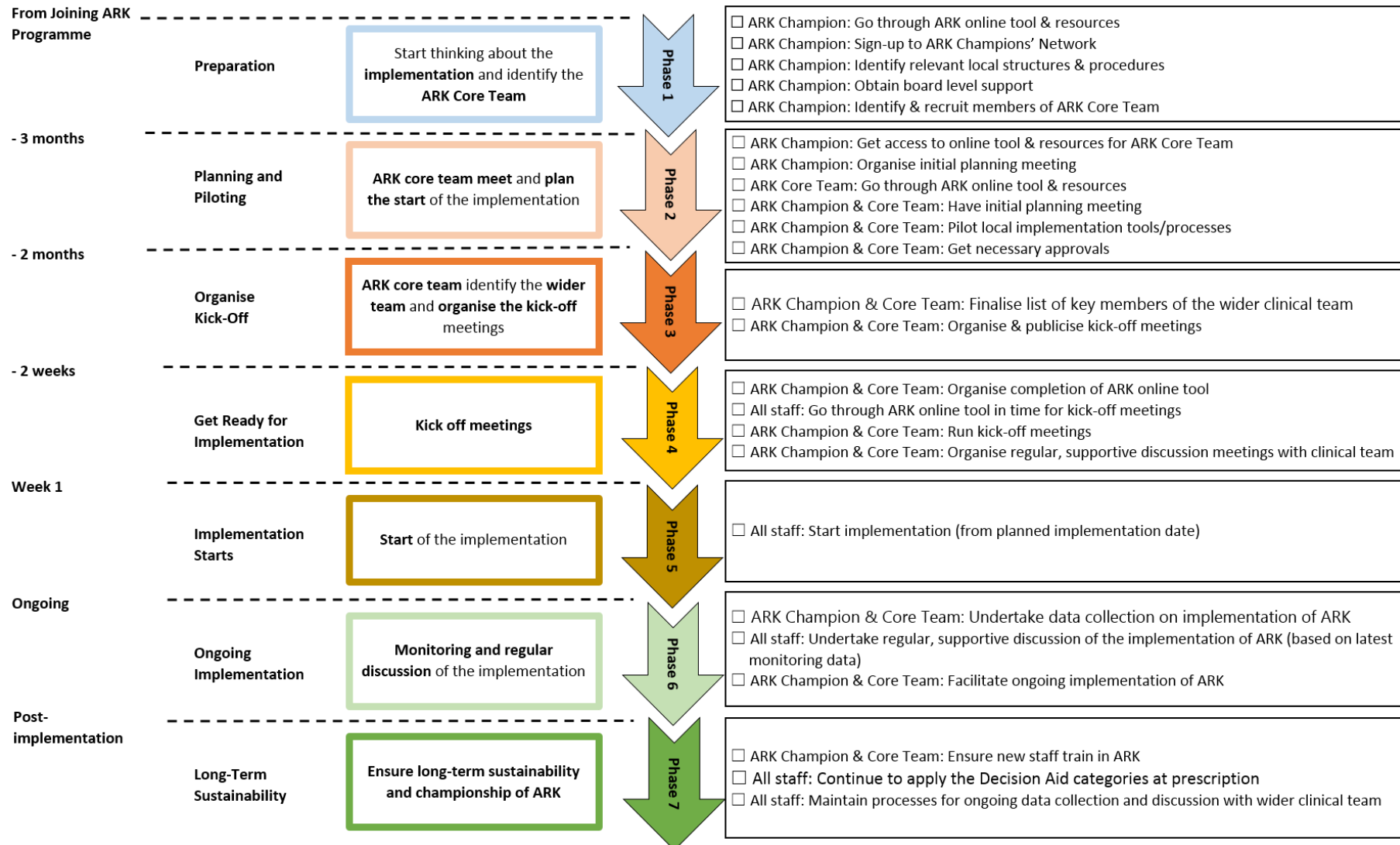


Supplementary materials



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))



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

ACUTE ANTIMICROBIAL PRESCRIPTIONS

INITIAL ANTIMICROBIAL PRESCRIPTIONS:		POSSIBLE = Infection is not the most likely diagnosis but you want to use antibiotics as a precaution PROBABLE = Infection is the most likely diagnosis but diagnosis and treatment needs to be reviewed daily									
DRUG (APPROVED NAME)		Dose	Notes			Circle administration times or write preferred alternative		Date & Administration			REVIEW AND REVISE (TICK): Stop <input type="checkbox"/> Continue: IV to oral <input type="checkbox"/> Switch <input type="checkbox"/> OPAT <input type="checkbox"/> No change <input type="checkbox"/>
Prescriber Name	Start Date	Route				06 00	00				
Prescriber Signature	Bleep	Frequency	Pharmacy Supply			12 00	00				
Category of Initial Prescription			Indication			14 00	00				
CIRCLE →	POSSIBLE	PROBABLE				18 00	00				
						22 00	00				
						Pharmacist check					
DRUG (APPROVED NAME)		Dose	Notes			Circle administration times or write preferred alternative		Date & Administration			REVIEW AND REVISE (TICK): Stop <input type="checkbox"/> Continue: IV to oral <input type="checkbox"/> Switch <input type="checkbox"/> OPAT <input type="checkbox"/> No change <input type="checkbox"/>
Prescriber Name	Start Date	Route				06 00	00				
Prescriber Signature	Bleep	Frequency	Pharmacy Supply			12 00	00				
Category of Initial Prescription			Indication			14 00	00				
CIRCLE →	POSSIBLE	PROBABLE				18 00	00				
						22 00	00				
						Pharmacist check					
DRUG (APPROVED NAME)		Dose	Notes			Circle administration times or write preferred alternative		Date & Administration			REVIEW AND REVISE (TICK): Stop <input type="checkbox"/> Continue: IV to oral <input type="checkbox"/> Switch <input type="checkbox"/> OPAT <input type="checkbox"/> No change <input type="checkbox"/>
Prescriber Name	Start Date	Route				06 00	00				
Prescriber Signature	Bleep	Frequency	Pharmacy Supply			12 00	00				
Category of Initial Prescription			Indication			14 00	00				
CIRCLE →	POSSIBLE	PROBABLE				18 00	00				
						22 00	00				
						Pharmacist check					

FINALISED ANTIMICROBIAL PRESCRIPTIONS made at Review and Revise		FINALISED PRESCRIPTION = After observation, review of investigations and senior (ST3+) / specialist input a final choice of antibiotic, route and duration is made									
DRUG (APPROVED NAME)		Dose	New dose	Date	Circle administration times or write preferred alternative		Date & Administration Record				
Prescriber Name	Start Date	Route	New route	Prescriber Name	06 00	00					
Prescriber Signature	Bleep	Frequency	New frequency	Prescriber Signature	08 00	00					
Indication & Senior/Specialist name		Duration	Pharmacy Supply			12 00	00				
						14 00	00				
						18 00	00				
						22 00	00				
						Pharmacist check					
DRUG (APPROVED NAME)		Dose	New dose	Date	Circle administration times or write preferred alternative		Date & Administration Record				
Prescriber Name	Start Date	Route	New route	Prescriber Name	06 00	00					
Prescriber Signature	Bleep	Frequency	New frequency	Prescriber Signature	08 00	00					
Indication & Senior/Specialist name		Duration	Pharmacy Supply			12 00	00				
						14 00	00				
						18 00	00				
						22 00	00				
						Pharmacist check					
DRUG (APPROVED NAME)		Dose	New dose	Date	Circle administration times or write preferred alternative		Date & Administration Record				
Prescriber Name	Start Date	Route	New route	Prescriber Name	06 00	00					
Prescriber Signature	Bleep	Frequency	New frequency	Prescriber Signature	08 00	00					
Indication & Senior/Specialist name		Duration	Pharmacy Supply			12 00	00				
						14 00	00				
						18 00	00				
						22 00	00				
						Pharmacist 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** meningococcal 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”.

INITIAL ANTIBIOTIC PRESCRIPTIONS:		POSSIBLE = Infection is not the most likely diagnosis but you want to use antibiotics as a precaution PROBABLE = Infection is the most likely diagnosis but diagnosis and treatment needs to be reviewed daily						
DRUG (APPROVED NAME)	Dose	Notes				Circle administration times or write preferred alternative	Date & Administration	REVIEW AND REVISE (TICK)
Ceftriaxone	2g					06:00 12:00 18:00	12/5	Stop <input type="checkbox"/>
Prescriber name	Start Date	Route	New route	Prescriber name	Prescriber Signature	12:00 14:00 18:00		Continue: IV to oral <input type="checkbox"/>
12/5	12/5	IV		12/5	12/5	22:00		Switch <input type="checkbox"/>
Category of Initial Prescription	Bleep	Frequency	New frequency	Pharmacy Supply	Indication	18:00 22:00		OPAT <input type="checkbox"/>
POSSIBLE	BSU	4			ENCEPHALITIS	Pharmacist check		No change <input type="checkbox"/>
DRUG (APPROVED NAME)	Dose	Notes				Circle administration times or write preferred alternative	Date & Administration	REVIEW AND REVISE (TICK)
Amoxicillin	2g					06:00 12:00 18:00	12/5	Stop <input type="checkbox"/>
Prescriber name	Start Date	Route	New route	Prescriber name	Prescriber Signature	12:00 14:00 18:00		Continue: IV to oral <input type="checkbox"/>
12/5	12/5	IV		12/5	12/5	22:00		Switch <input type="checkbox"/>
Category of Initial Prescription	Bleep	Frequency	New frequency	Pharmacy Supply	Indication	18:00 22:00		OPAT <input type="checkbox"/>
POSSIBLE	BSU	4			GENERAL	Pharmacist check		No change <input type="checkbox"/>
DRUG (APPROVED NAME)	Dose	Notes				Circle administration times or write preferred alternative	Date & Administration	REVIEW AND REVISE (TICK)
Penicillin	200mg	egFR = 29 ml/min (11/5)				06:00 12:00 18:00	12/5	Stop <input type="checkbox"/>
Prescriber name	Start Date	Route	New route	Prescriber name	Prescriber Signature	12:00 14:00 18:00		Continue: IV to oral <input type="checkbox"/>
12/5	12/5	IV		12/5	12/5	22:00		Switch <input type="checkbox"/>
Category of Initial Prescription	Bleep	Frequency	New frequency	Pharmacy Supply	Indication	18:00 22:00		OPAT <input type="checkbox"/>
POSSIBLE	BSU	4			GENERAL	Pharmacist check		No change <input type="checkbox"/>
FINALISED ANTIBIOTIC PRESCRIPTIONS made at Review and Revise		FINALISED PRESCRIPTION = After observation, review of investigations and senior (ST3+) / specialist input a final choice of antibiotic, route and duration is made						
DRUG (APPROVED NAME)	Dose	New dose	Date	Circle administration times or write preferred alternative	Date & Administration Record			
				06:00 08:00 12:00 14:00 18:00 22:00				
Prescriber name	Start Date	Route	New route	Prescriber name	Prescriber Signature			
Prescriber Signature	Bleep	Frequency	New frequency	Pharmacy Supply	Indication			
Indication & Senior/specialist name	Duration	Pharmacy Supply						
DRUG (APPROVED NAME)	Dose	New dose	Date	Circle administration times or write preferred alternative	Date & Administration Record			
				06:00 08:00 12:00 14:00 18:00 22:00				
Prescriber name	Start Date	Route	New route	Prescriber name	Prescriber Signature			
Prescriber Signature	Bleep	Frequency	New frequency	Pharmacy Supply	Indication			
Indication & Senior/specialist name	Duration	Pharmacy Supply						
DRUG (APPROVED NAME)	Dose	New dose	Date	Circle administration times or write preferred alternative	Date & Administration Record			
				06:00 08:00 12:00 14:00 18:00 22:00				
Prescriber name	Start Date	Route	New route	Prescriber name	Prescriber Signature			
Prescriber Signature	Bleep	Frequency	New frequency	Pharmacy Supply	Indication			
Indication & Senior/specialist name	Duration	Pharmacy Supply						

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)