

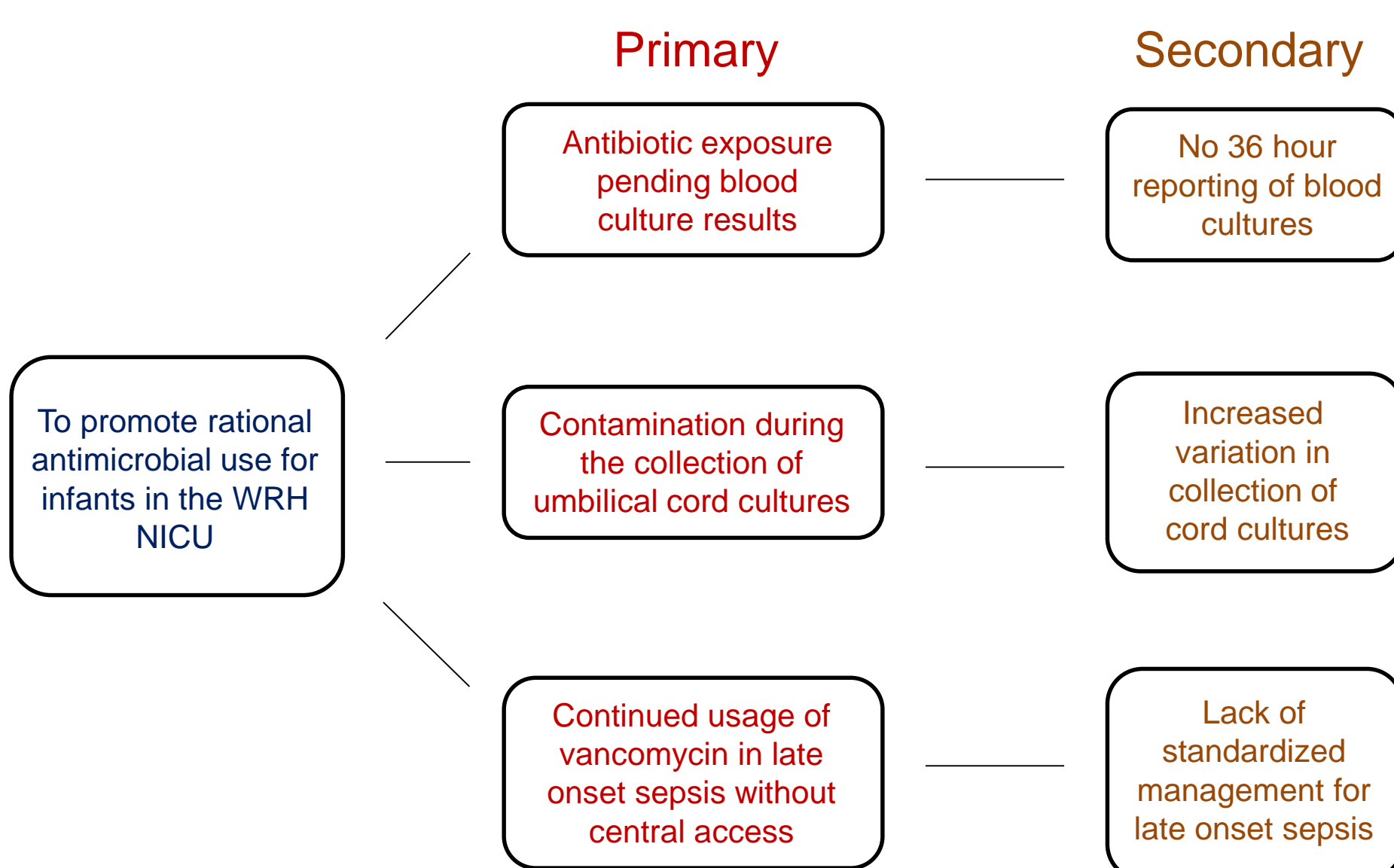
Aim

To promote rational antibiotic usage in infants admitted to the WRH NICU with the risk of sepsis.

Importance

Antibiotics are necessary for treatment of bacterial sepsis but prolonged exposure to antibiotics can alter the infant microbiome and promote antibiotic resistance. Therefore, careful evaluation of the use of antimicrobials is necessary to balance these risks and benefits.

Driver Diagram or any other aspect of development of plan

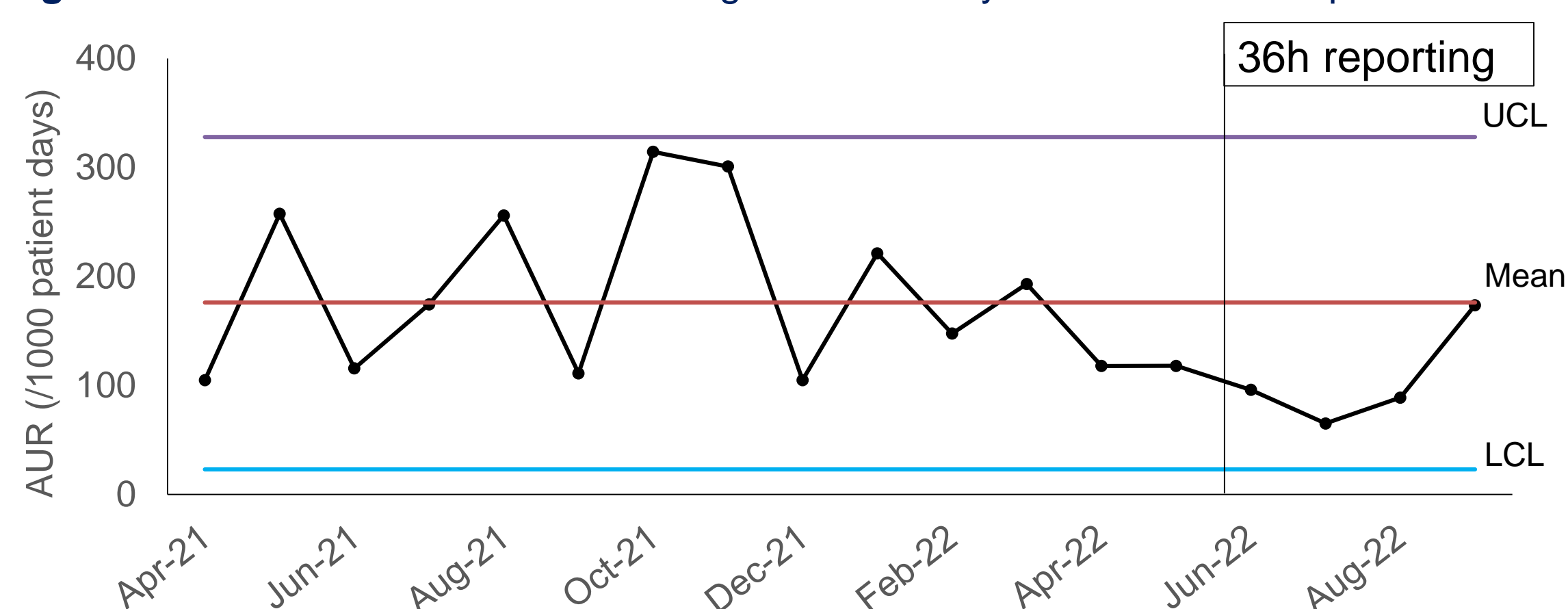


PDSA cycle / Change plan

- Pathogens are mostly isolated by 36 hours from blood cultures; thus, stopping antibiotics at 36 instead of 48h is reasonable → implement 36 hour culture reporting for infants at risk of early onset neonatal sepsis
- Umbilical cord cultures may be an alternative culture source; but, false positive rates are high → reduce contamination of umbilical cord cultures (audit culture collection)
- Cloxacillin may be safe alternative for the management of late onset sepsis (LOS) → promote rational utilization of vancomycin in LOS (review local LOS and develop guidelines for antibiotics in LOS)

Data / Results

Figure 1: Control chart for antibiotic usage rate for early onset neonatal sepsis at WRH



Abbreviations: CONS – coagulase negative staph, AUR – antibiotic usage rate (days of antibiotics/days of hospitalization), DOT = days of therapy, UCL – upper control limit, LCL – lower control limit

Figure 2: Control chart for days of antibiotic therapy for early onset neonatal sepsis per admission

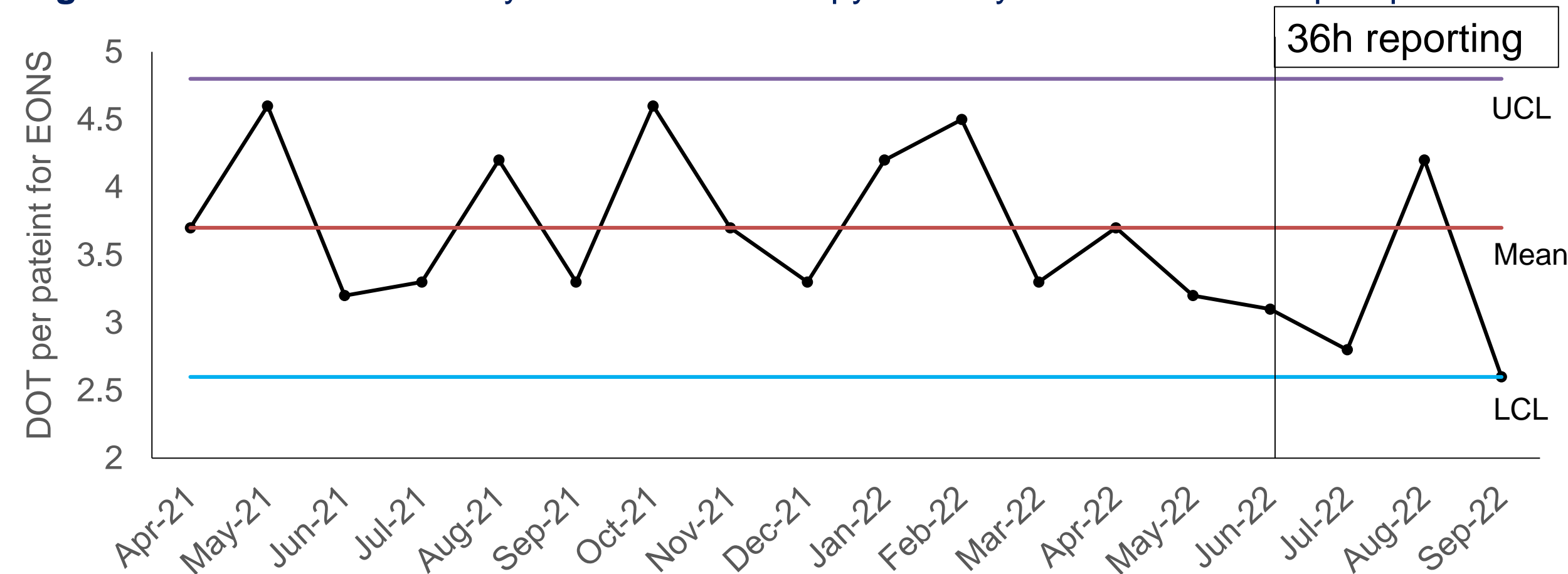


Table 1: Likely contaminant umbilical cord cultures (April 2021 – Sept 2022)

n/N (%)	Contaminant organisms	# treated (%)	DOT /patient
17/255 (6.7)	CONS (5)	12 (70.6)	4.6
	Strep lugidenesis (3)		
	Strep anginosus (2)		
	Corynebacterium simulans (2)		
	Cutibacterium avidum (1)		
	Micrococcus luteus (1)		
	Strep viridans (1)		
	Gram positive cocci (1)		
	Gram positive bacilli (1)		

- With 36 hour reporting, we noticed a ↓ in antibiotic exposure for early onset sepsis.
- Contamination occurs in 6.7% of umbilical cord culture samples with 4.6 DOT per patient

Lessons Learned / next stage/plan

- Quality improvement requires regular, timely and continued direct feedback
- Automated functions can reduce variations in practice but require regular assessment of both outcome & balancing measures
- Stewardship includes antibiotics and bacterial culture; we plan to continue choosing wisely for antibiotic and culture use