

Retrospective 5 year audit of the incidence of necrotising enterocolitis (NEC) in patients with truncus arteriosus (TA) admitted to a regional paediatric cardiac intensive care unit (Leeds General Infirmary) prior to the introduction of a high-risk feeding protocol

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Introduction:

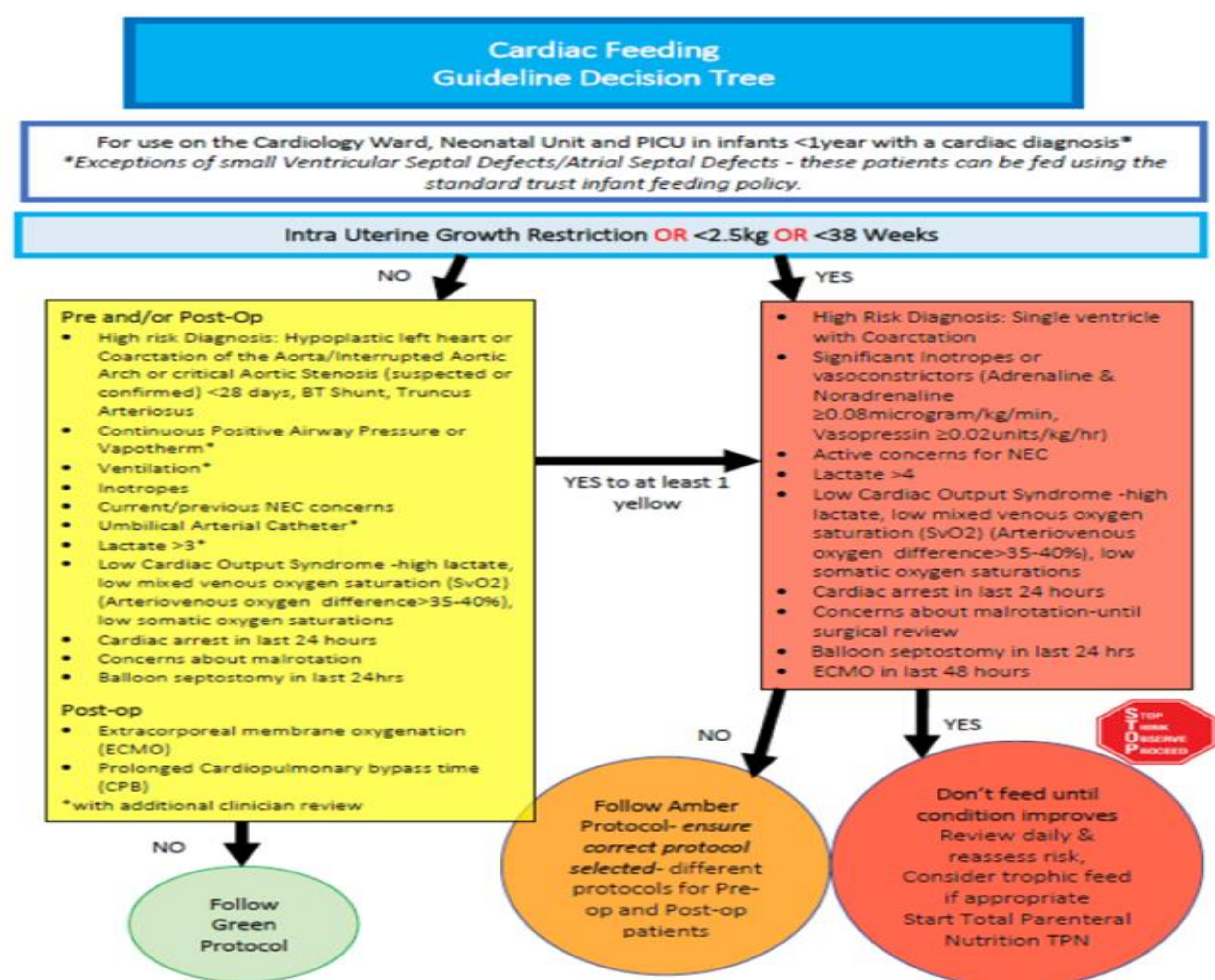
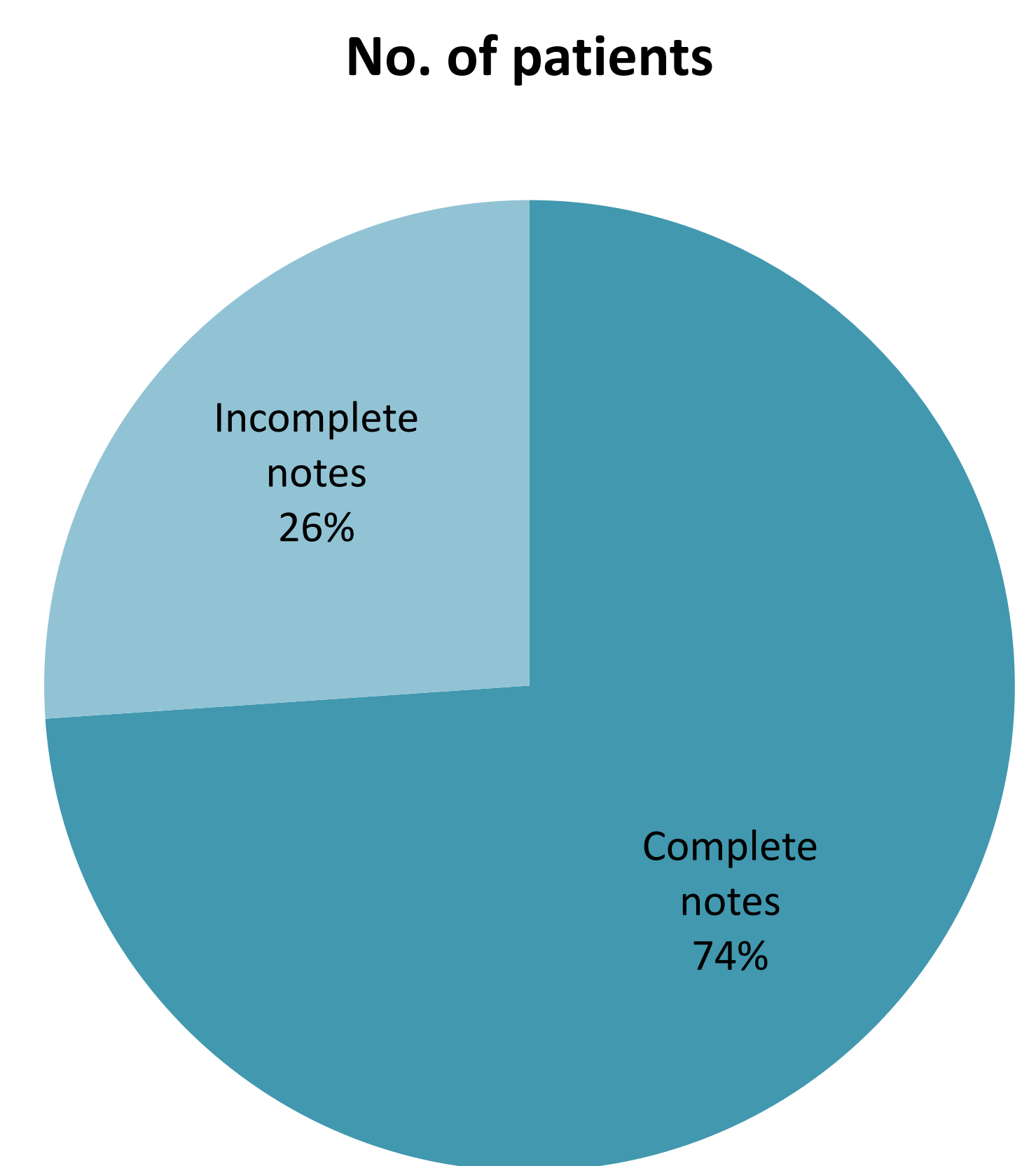
At Leeds General Infirmary we have developed feeding protocols to support safe escalation of enteral feeds in infants with underlying congenital heart disease. These protocols allow identification of patients considered high risk of complications if fed. Advice is based primarily on underlying diagnosis and current clinical state. Guidance on feed type and rate of escalation of feed volumes forms the basis of the protocols. TA Patients have not historically been considered a group that needed to commence enteral feeds cautiously until a recent retrospective multi-centre trial suggested there was a 5.5% NEC incidence rate, putting them at the same risk level for NEC as patients with Hypoplastic Left Heart Syndrome (1).

Method:

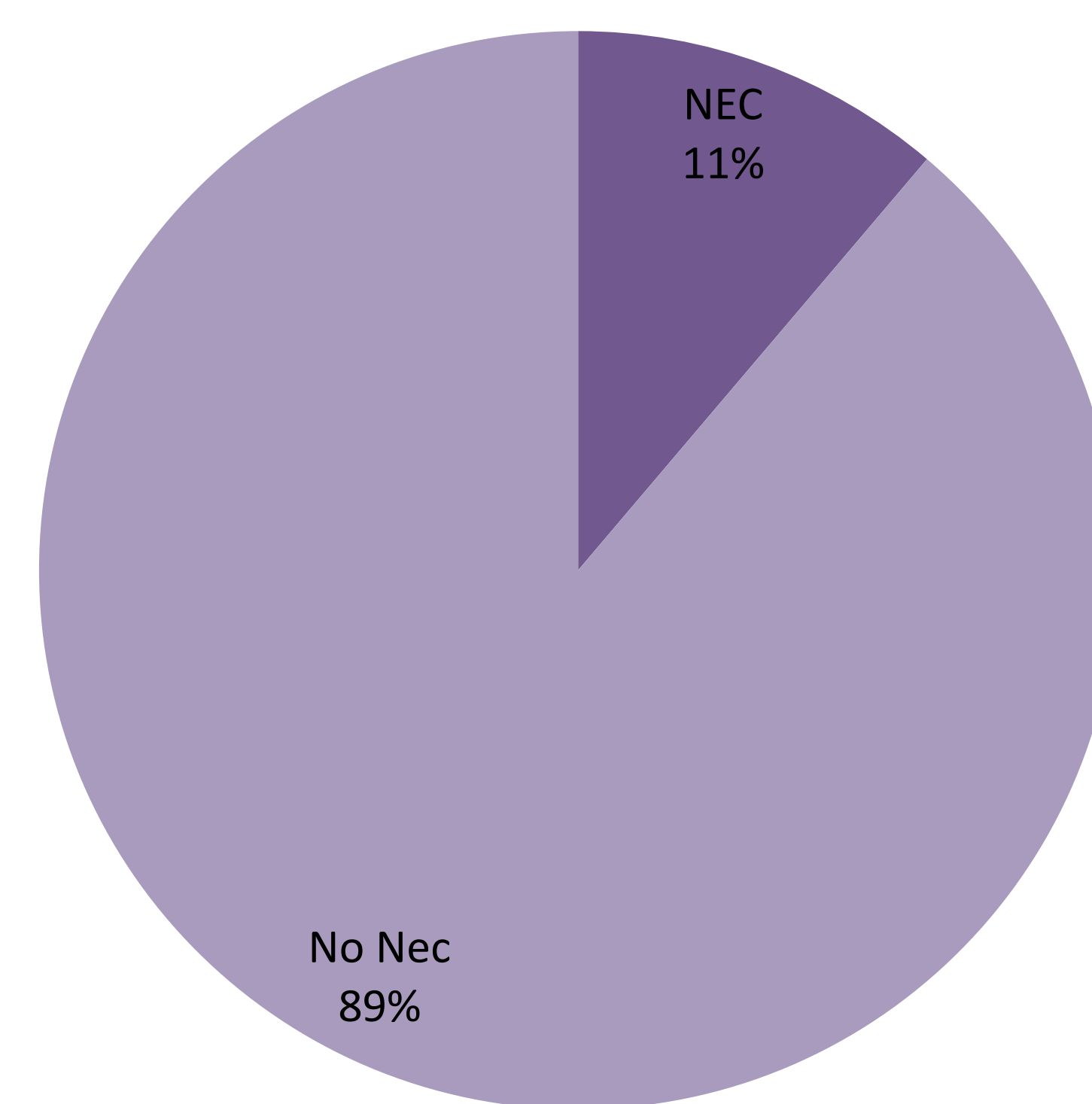
We reviewed medical and dietetic notes on TA patients admitted to PICU at LGI over a five-year period from December 2014 to December 2019 inclusive.

Results:

23 patients were identified
6 had incomplete notes
17 patients left for analysis



TA Patients with NEC



11.8% (2 patients) developed NEC
Both born <37 weeks gestation
(32/40 and 31+6/40)

POST-OP AMBER FEEDING PROTOCOL		
Step 1	Feed Selection 1 st Line Feed Choice- EBM 2 nd Line Choice- Pepti-Junior or Alfacino (Halal) Use ONLY EBM in Single Ventricle Post-Hybrid Patients Donor EBM may be required.	Throughout feed build up ensure continuous monitoring for: Abdominal distension, bilious/bloody aspirate/>4hrs aspirates, PR bleed or mucous/bloody stools, frequent vomiting, any other clinical concern. If ANY symptoms seen: STOP FEED & request medical review +/- Abdominal X-ray/Surgical Review/Antibiotics Once ready to feed again start at beginning of protocol All patients still on solely NGF 3 days post-extubation should be referred to SLT for oral stimulation PN TPN should only be started for patients likely to require it for a minimum of 5 days. Fluid allowance will need to increase to allow appropriate TPN provision, with consideration given to additional diuretics where fluid allowances are restricted. See Trust TPN Guideline for further information
Step 2	NG Feed Build Up Day 1- 10ml/kg given over 24hrs Day 2- increase to 30ml/kg Day 3 onwards- increase feed 30ml/kg every 24hrs* until at target set by Dietitian (as fluid allowance allows) *Patients with Coarctation of Aorta AND being fed on just EBM should increase 12hourly from Day 3 onwards. Only include feed in fluid allowance from Day 2	
Step 3	Progressing with Feeds Move to oral feeds as able. Feeds may be fortified under Dietitian advice in cases of faltering growth. Not Single Ventricle Pathology- if no EBM step to formula of choice and refer to Trust infant feeding guideline. Single Ventricle Pathology AND - NOT Post-Hybrid Procedure- Remain on hydrolysed feed until 2 nd stage operation/discussion with clinic consultant. - Post- Hybrid Procedure- Remain on EBM/Donor EBM until 1 month post procedure. To then transition to hydrolysed formula if donor EBM being used, over a 5-7 day period.	
<p>Worked Example of ml/kg per 24hrs increases: i.e. 3kg infant</p> <ul style="list-style-type: none"> Day 1- 10ml/kg= 10ml x 3kg= 30ml 30ml÷24hrs= 1.3ml/hr feed rate for Day 1 of feeding Day 2-30ml/kg= 30ml x 3kg= 90ml 90ml÷24hrs=3.75ml/hr feed target rate for Day 2 of feeding Day 3 onwards- 30ml/kg increases every day= increasing the feed rate 4ml/hr every day until at target <p><i>N.B. Dietitian will calculate this during working days</i></p>		

(2)

Aim:

To assess our NEC rates within our TA cohort from the preceding 5 years to quantify the need for a high risk feeding protocol.

Conclusion:

- No babies born at term with TA developed NEC
- Being born < 37/40 with Congenital Heart Disease is separate risk factor for NEC
- Therefore we can update feeding guidelines so that TA is no longer a universal high risk condition and the more restrictive high risk feeding protocol can be reserved for TA patients who are premature
- The majority of feeds can be increased quicker so patients increase to full feeds quicker
- This allows for optimising growth and wound healing as well as reducing the need for parental nutrition and its associated complications