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NHS  
SCOTLAND

# NTG Annual Transport Data Report: 2023/24

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and Colin Devon (data analyst)  
ScotSTAR

# Method



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- Email to transport service's medical and nursing leads requesting activity data and service information from 1<sup>st</sup> April 2023 to 31<sup>st</sup> March 2024
  - Requests before 2019/2020 covered first 6 months of calendar year only

# SoNAR

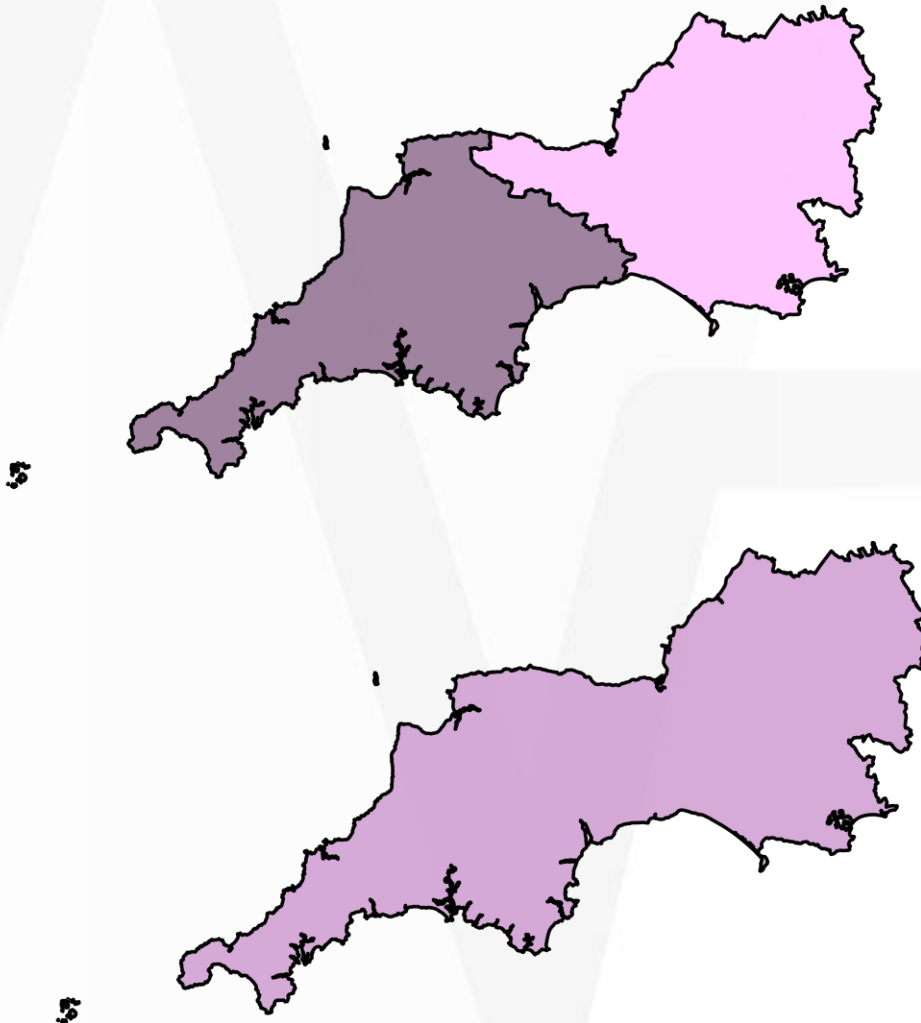


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Peninsula and NEST have merged to become SoNAR



# Number of Services UK Neonatal Transport Services

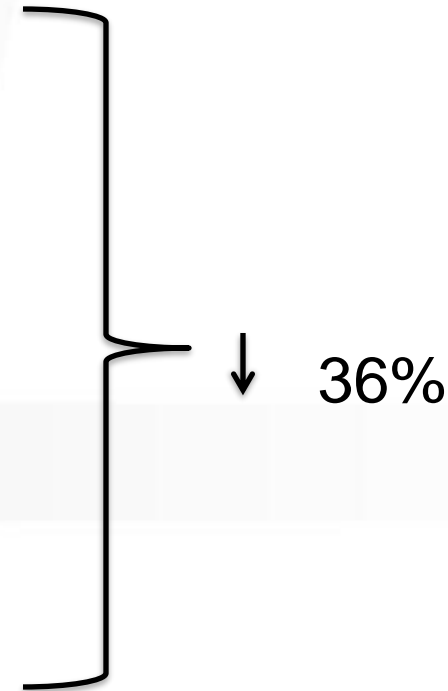


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- 2012 – data from 22
- 2013 – data from 21
- 2014 – data from 19
- 2015 – data from 19
- 2016 to 2017 – data from 18
- 2018 to 2023 – data from 15
- 2024 onwards – data from 14



# UK Teams



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# All team annualised UK neonatal transport activity



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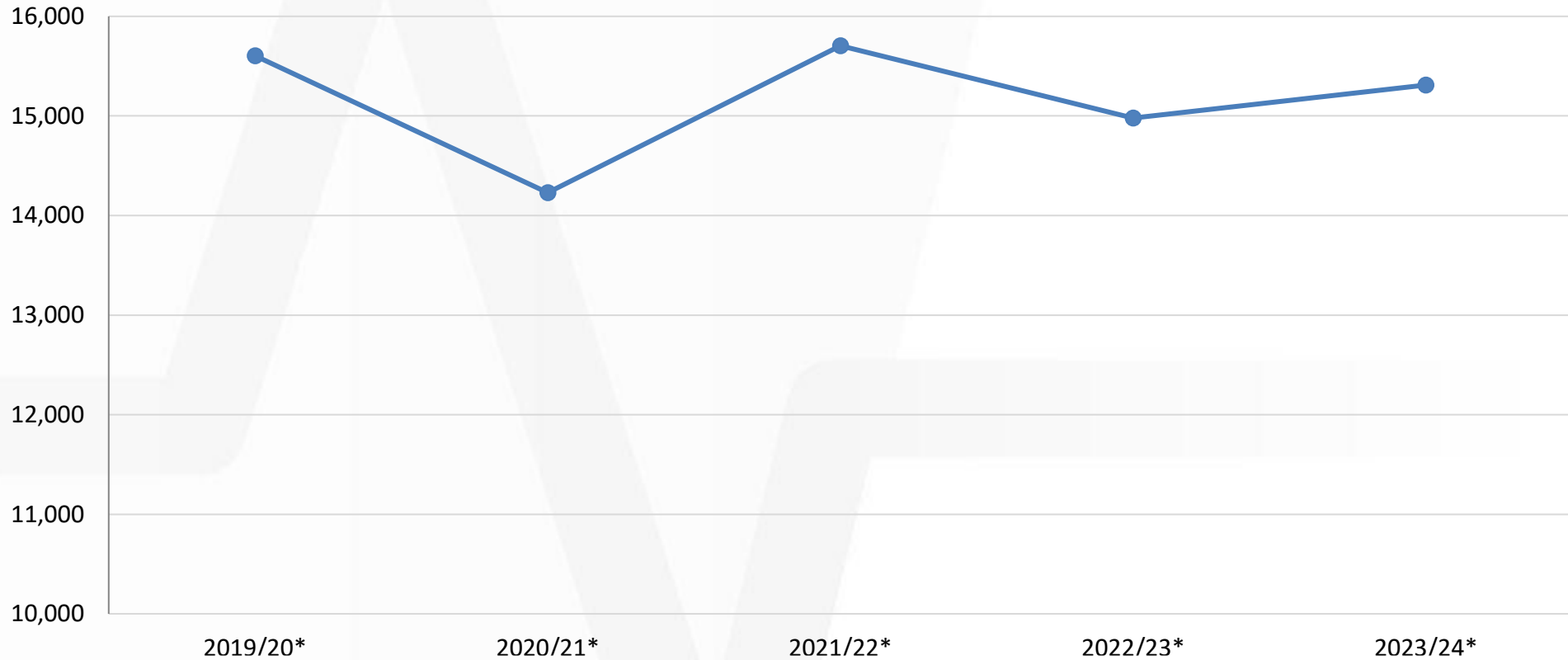


# UK neonatal transport activity



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2019-20 onwards data 12-month collection period, prior to that 6 months was used

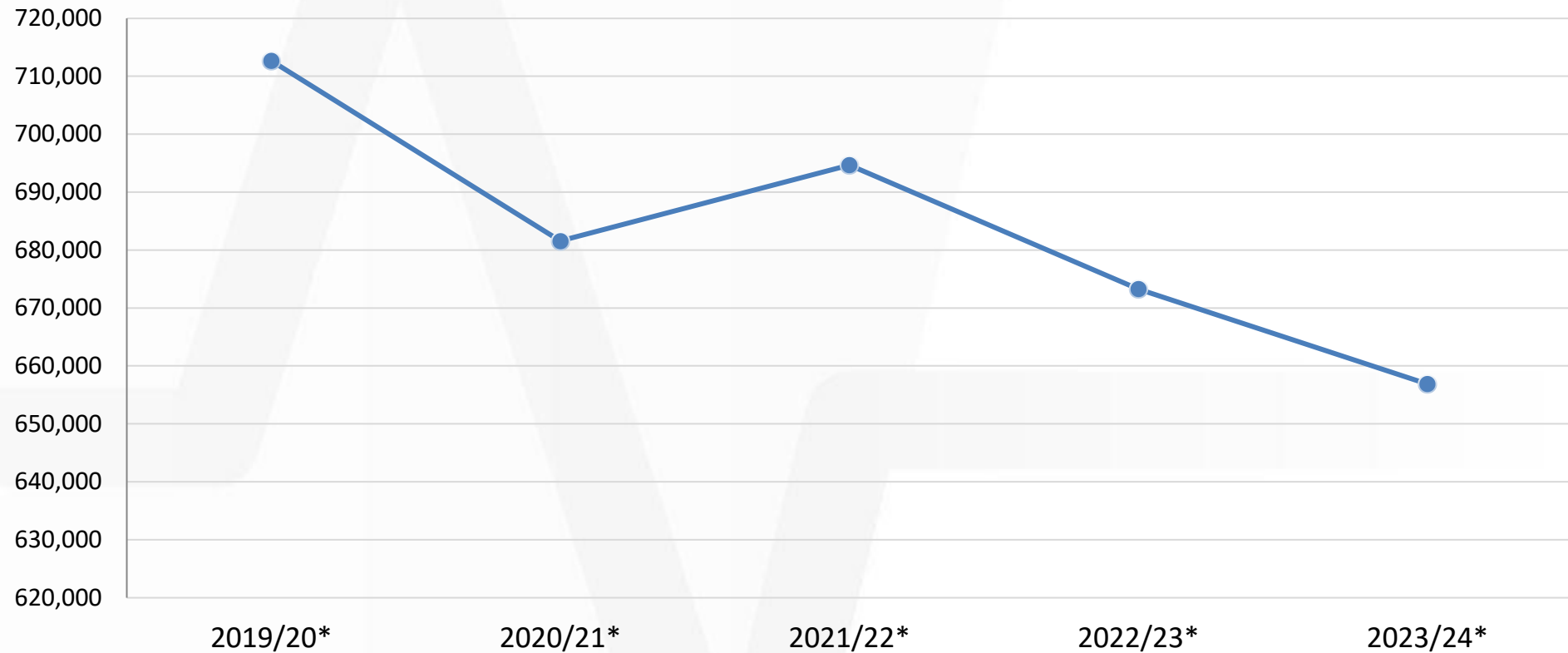


# UK Yearly birth rate



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Birth data from relevant national bodies. The birth data is yearly so only for indication of possible change.  
2019/20 using 2019 figures, 2021/22 using 2021 figures etc.

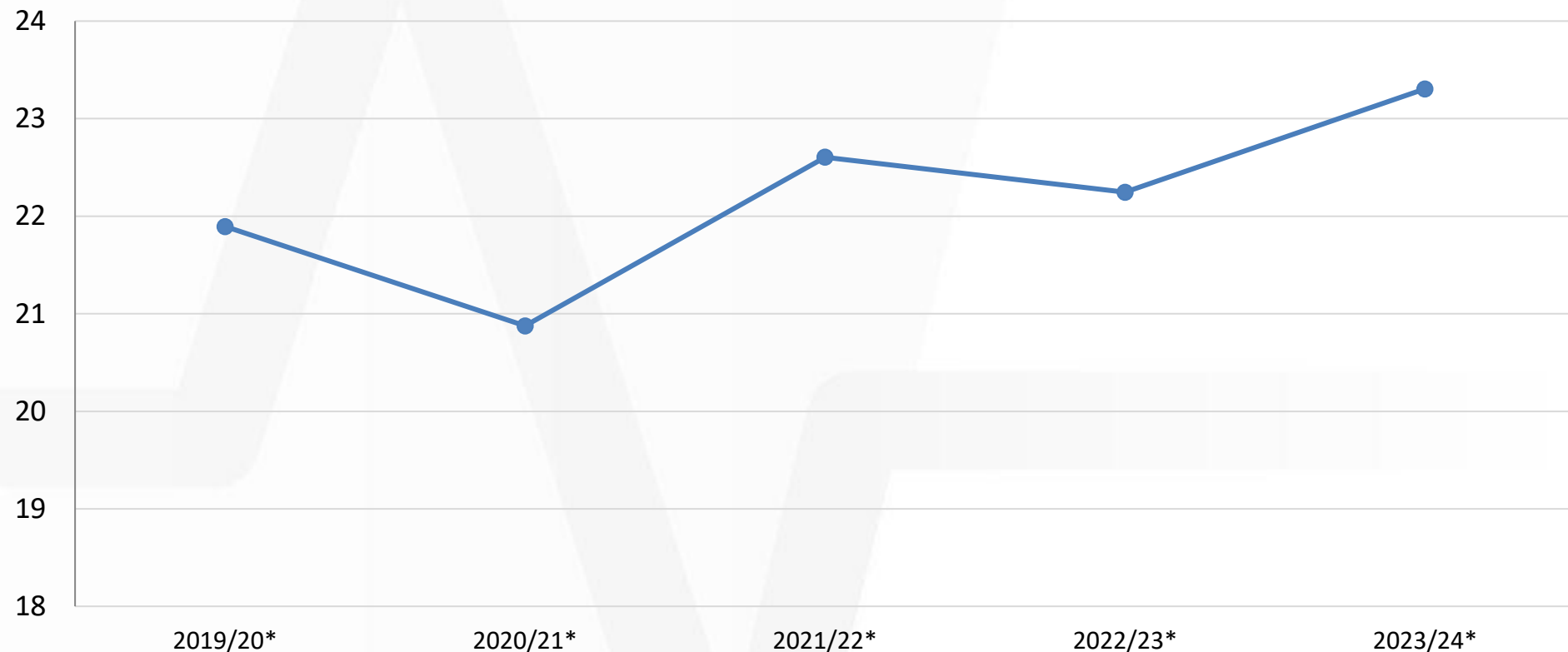




# UK neonatal transport NTG transfers per 1,000 live births



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Birth data from relevant national bodies. The birth data is yearly so only for indication of possible change.  
2019/20 using 2019 figures, 2021/22 using 2021 figures etc.



# UK Summary Data 2012 to 2019 Adjusted



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|                        | Adjusted 2012-<br>2019 Ave | 2019/20          | 2020/21          | 2021/22          | 2022/23          | 2023/24          |
|------------------------|----------------------------|------------------|------------------|------------------|------------------|------------------|
| <b>Total transfers</b> | <b>15,623</b>              | <b>16,229</b>    | <b>14,228</b>    | <b>15,073</b>    | <b>14,976</b>    | <b>15,308</b>    |
| Ventilated             | 3,962<br>(25.4%)           | 3,948<br>(24.3%) | 3,217<br>(22.6%) | 3,387<br>(22.5%) | 3,409<br>(22.8%) | 3,217<br>(21.0%) |
| HFOV                   | 70<br>(1.8%)               | 107<br>(2.7%)    | 112<br>(3.5%)    | 98<br>(2.9%)     | 113<br>(3.3%)    | 119<br>(3.7%)    |
| CPAP                   | 1,514<br>(9.7%)            | 1,138<br>(7.0%)  | 871<br>(6.1%)    | 1,029<br>(6.8%)  | 969<br>(6.5%)    | 1,008<br>(6.6%)  |
| High-flow              | 1,194<br>(7.7%)            | 1,769<br>(10.9%) | 1,663<br>(11.7%) | 1,824<br>(12.1%) | 2,054<br>(13.7%) | 2,203<br>(14.4%) |
| Cooling                | 538<br>(3.4%)              | 604<br>(3.7%)    | 502<br>(3.5%)    | 496<br>(3.3%)    | 437<br>(2.9%)    | 399<br>(2.6%)    |
| iNO                    | 264<br>(1.7%)              | 312<br>(1.9%)    | 298<br>(2.1%)    | 292<br>(1.9%)    | 266<br>(1.8%)    | 283<br>(1.8%)    |
| Palliative             | 49<br>(0.3%)               | 62<br>(0.4%)     | 56<br>(0.4%)     | 53<br>(0.4%)     | 51<br>(0.3%)     | 45<br>(0.3%)     |

2012-2019 data adjusted from 6 month to 12 months of data



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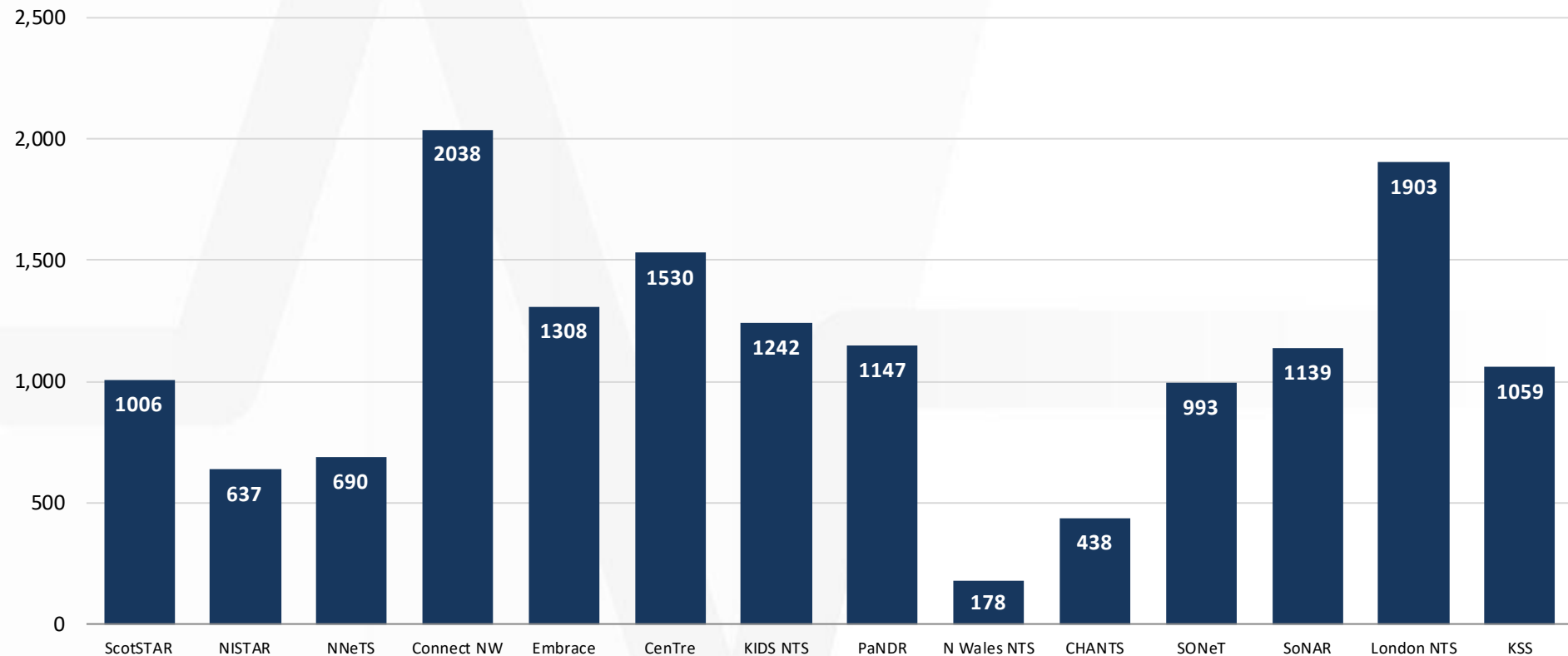
# Workload and trends in support

# Total Transfers per team Apr 2023 to Mar 2024



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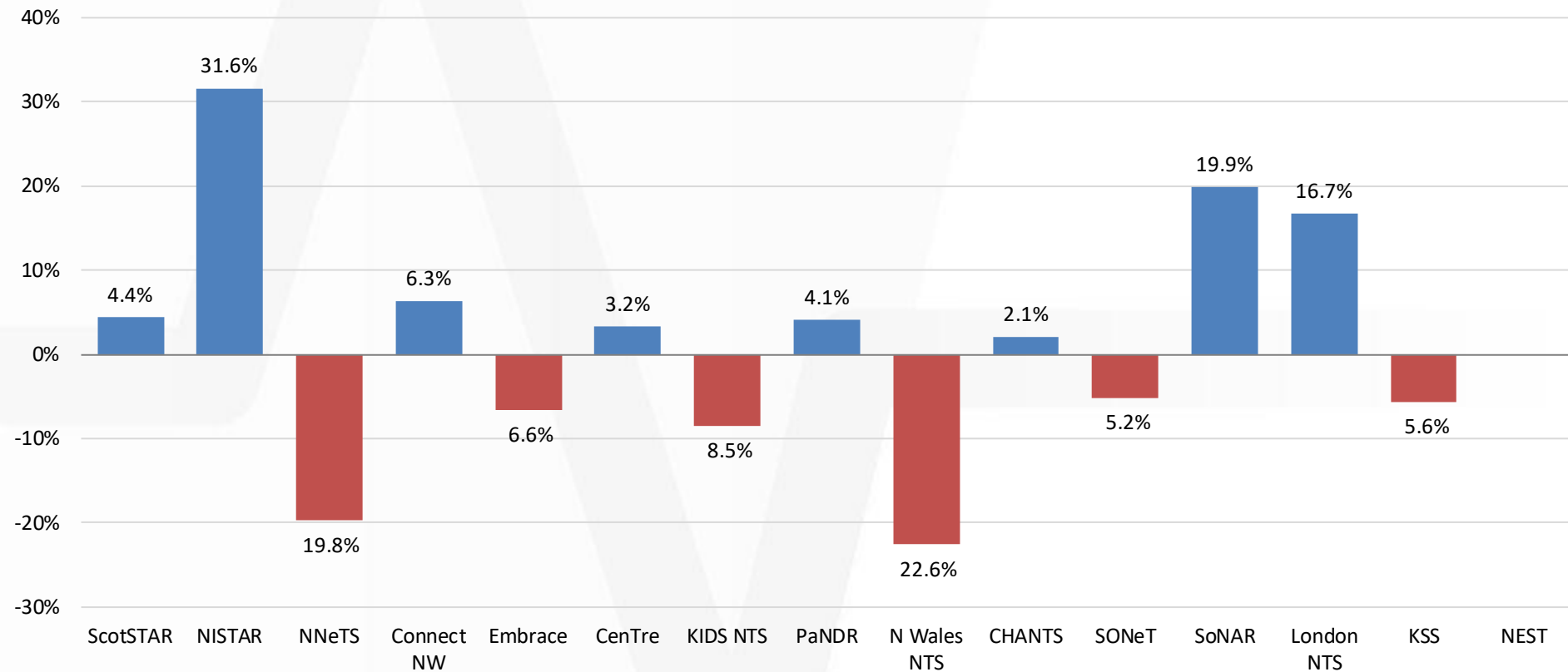


# Changes in activity by team, 2022/23 vs 2023/24



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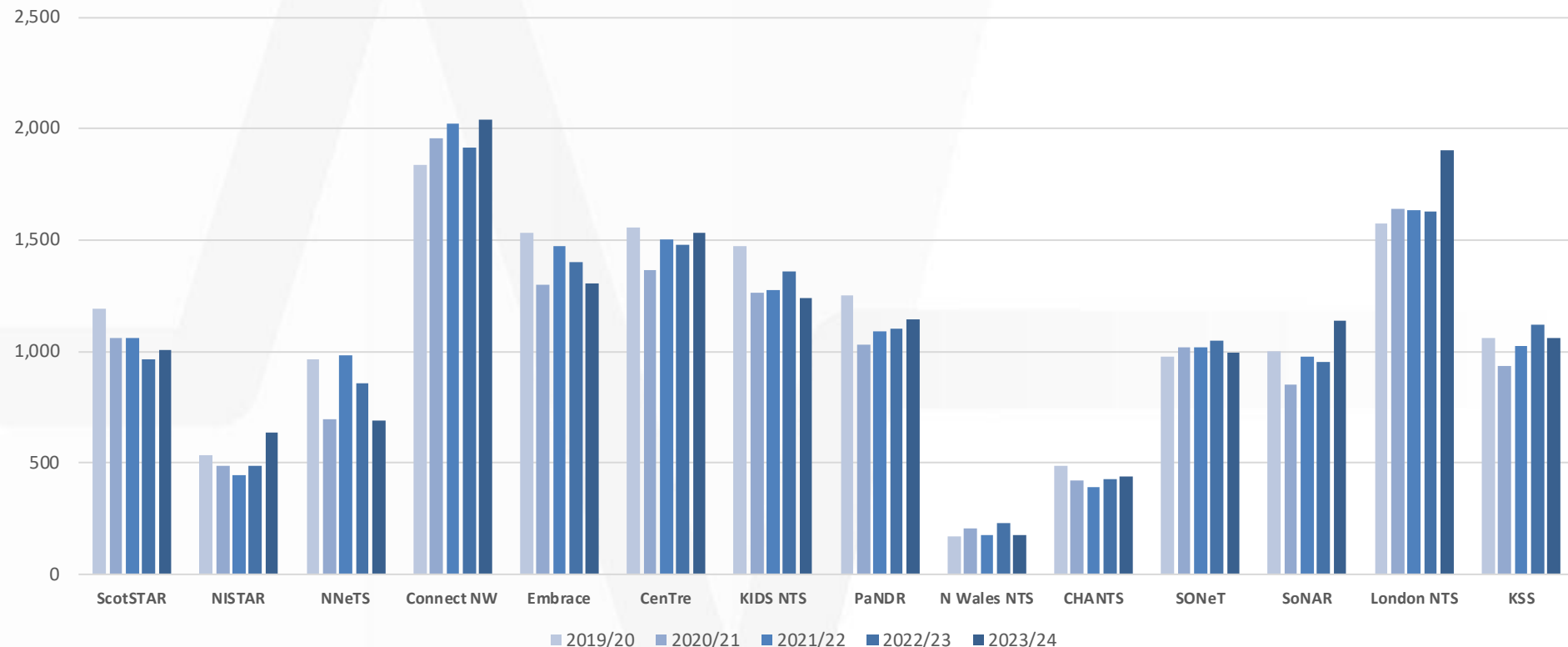


# Trends in transfer number by team, 2019/20 to 2023/24



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2019-20 onwards data 12-month collection period, prior to that 6 months used , adjusted for comparison

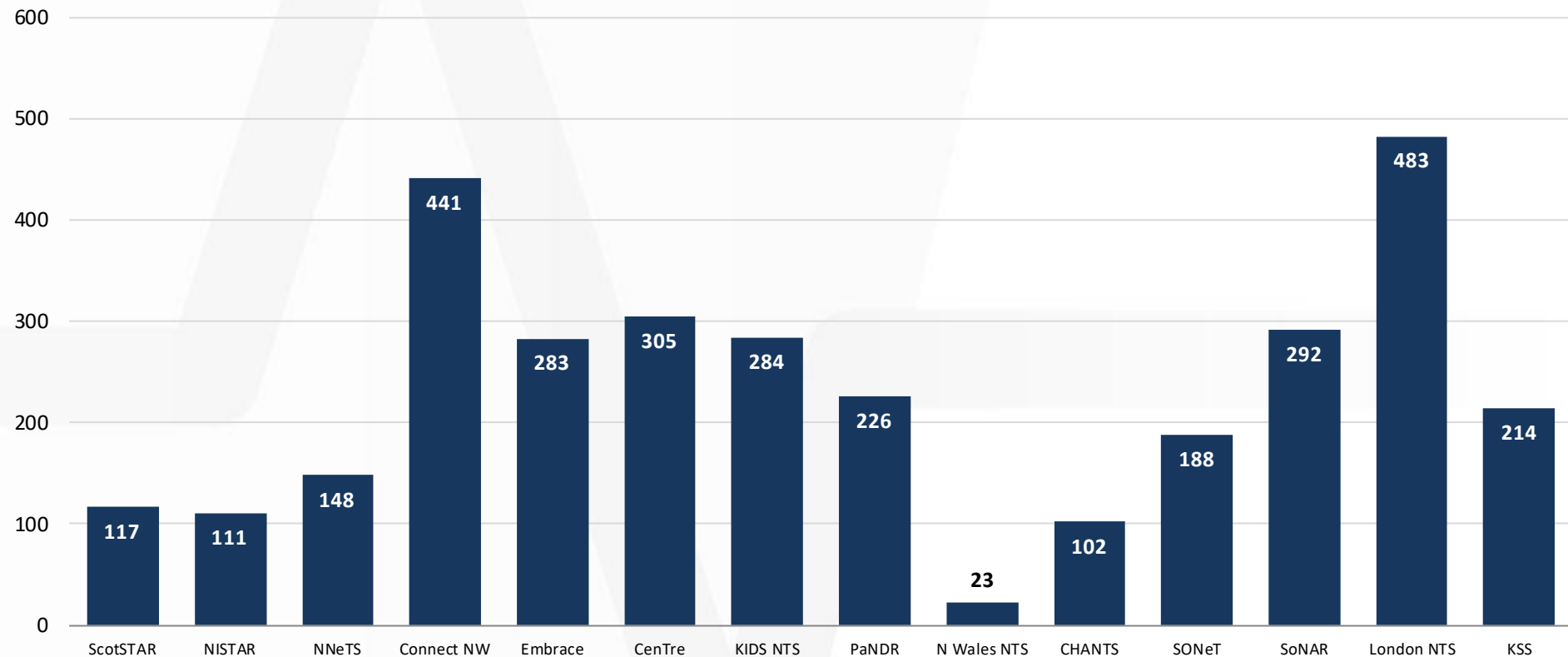


# Numbers of infants ventilated via an ETT during transfer by team, Apr 2023 to Mar 2024



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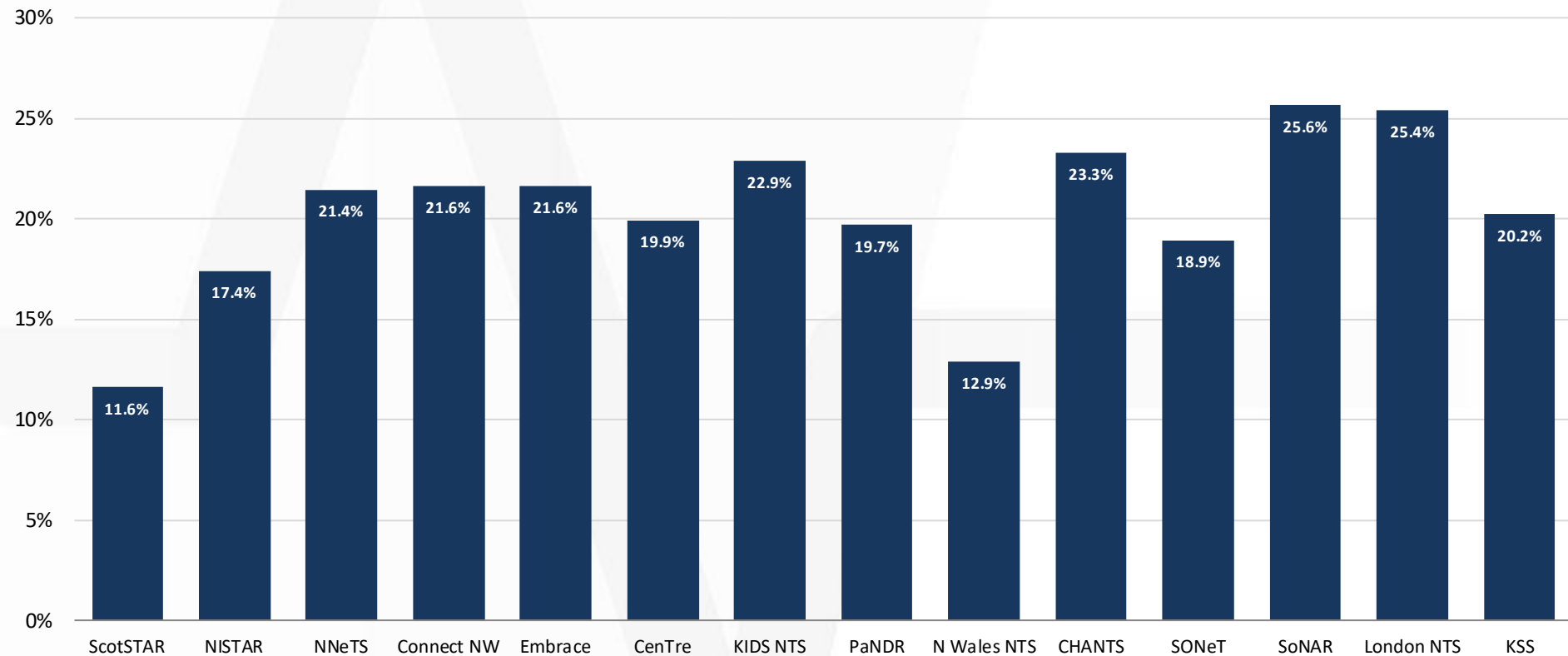


# Ventilated Transfers as a percentage of total transfers by team, Apr 2023 to Mar 2024



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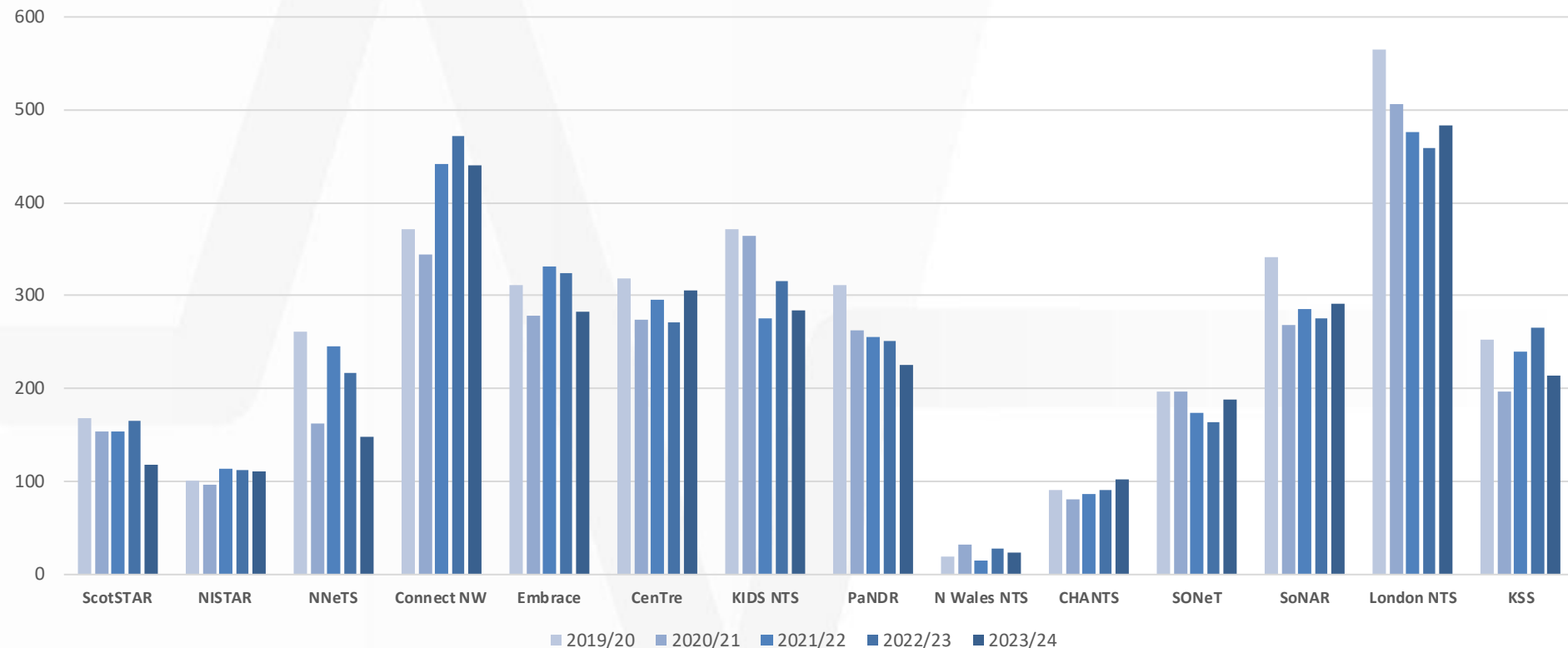


# Trends in numbers of ventilated transfer by team 2019/20 to 2023/24



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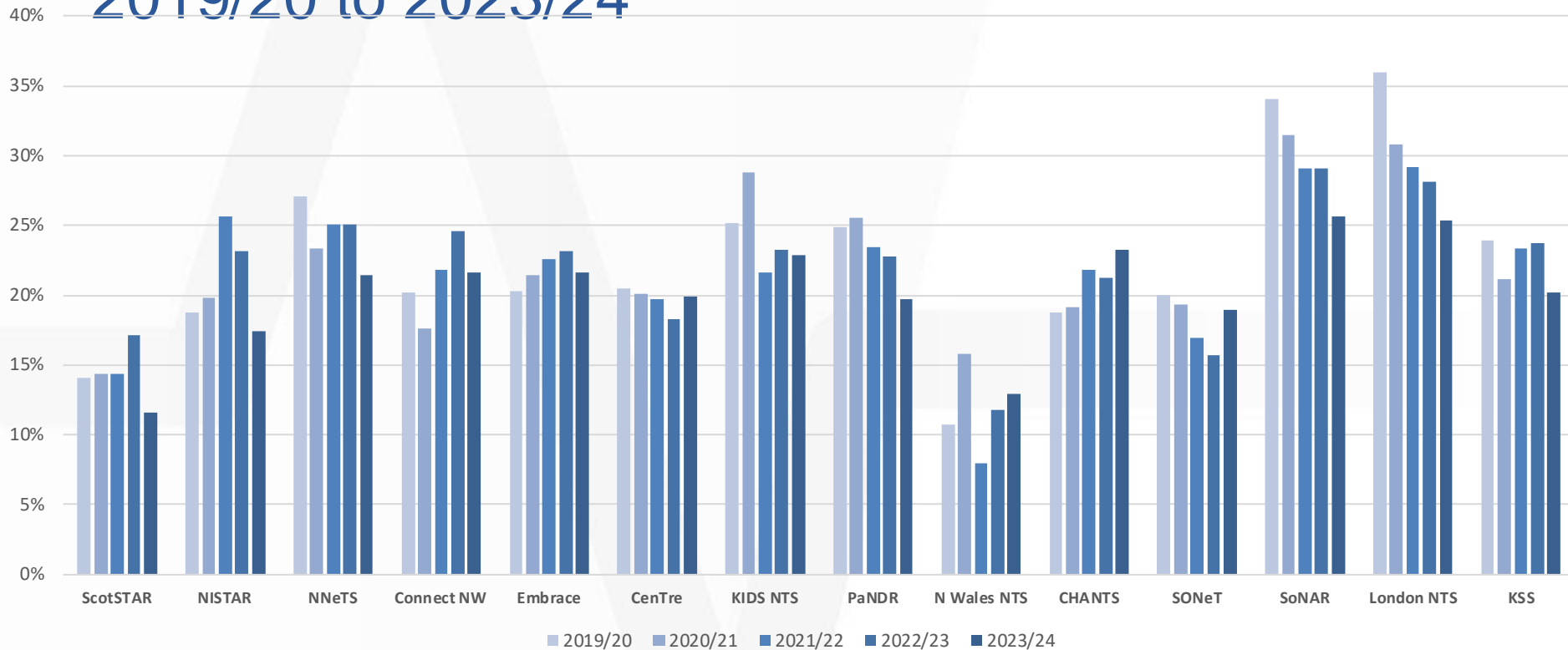


# Trends in ventilated transfers as percentage of total transfers, by team 2019/20 to 2023/24



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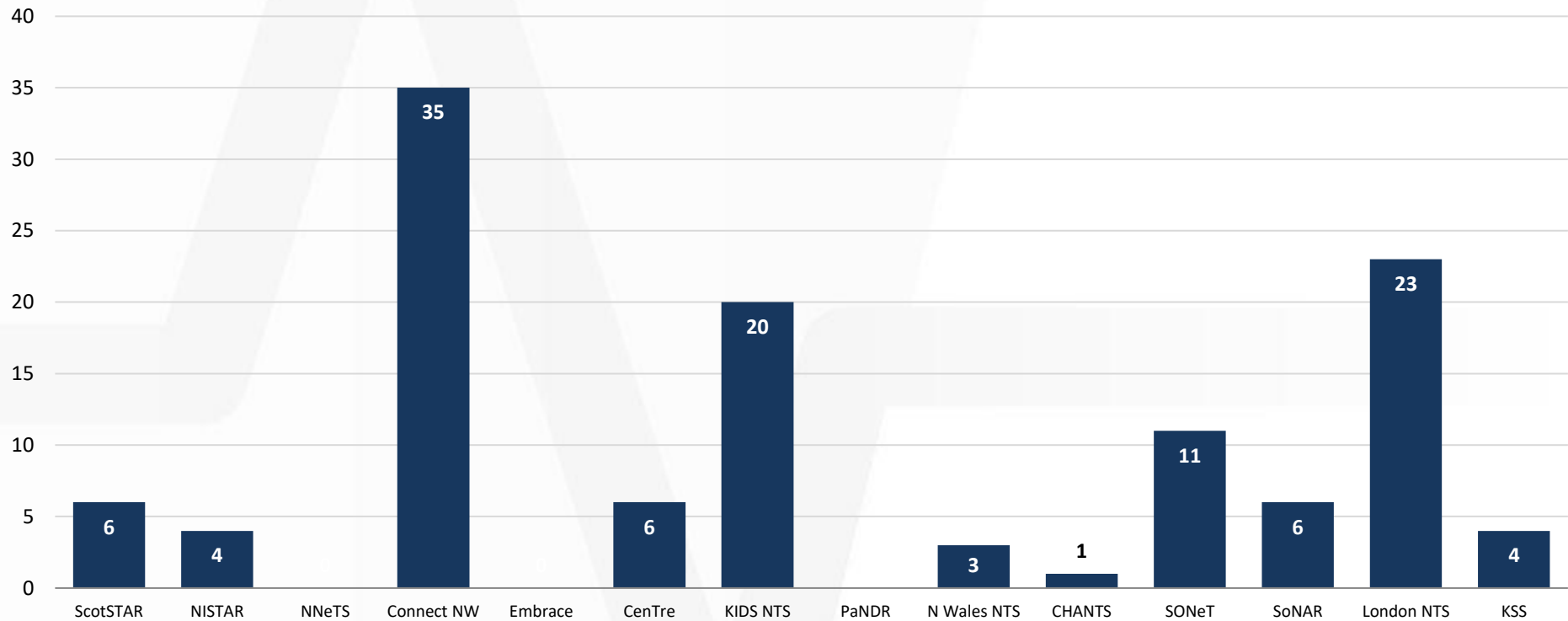


# High Frequency Oscillation Ventilation transfers by team Apr 2023 to Mar 2024



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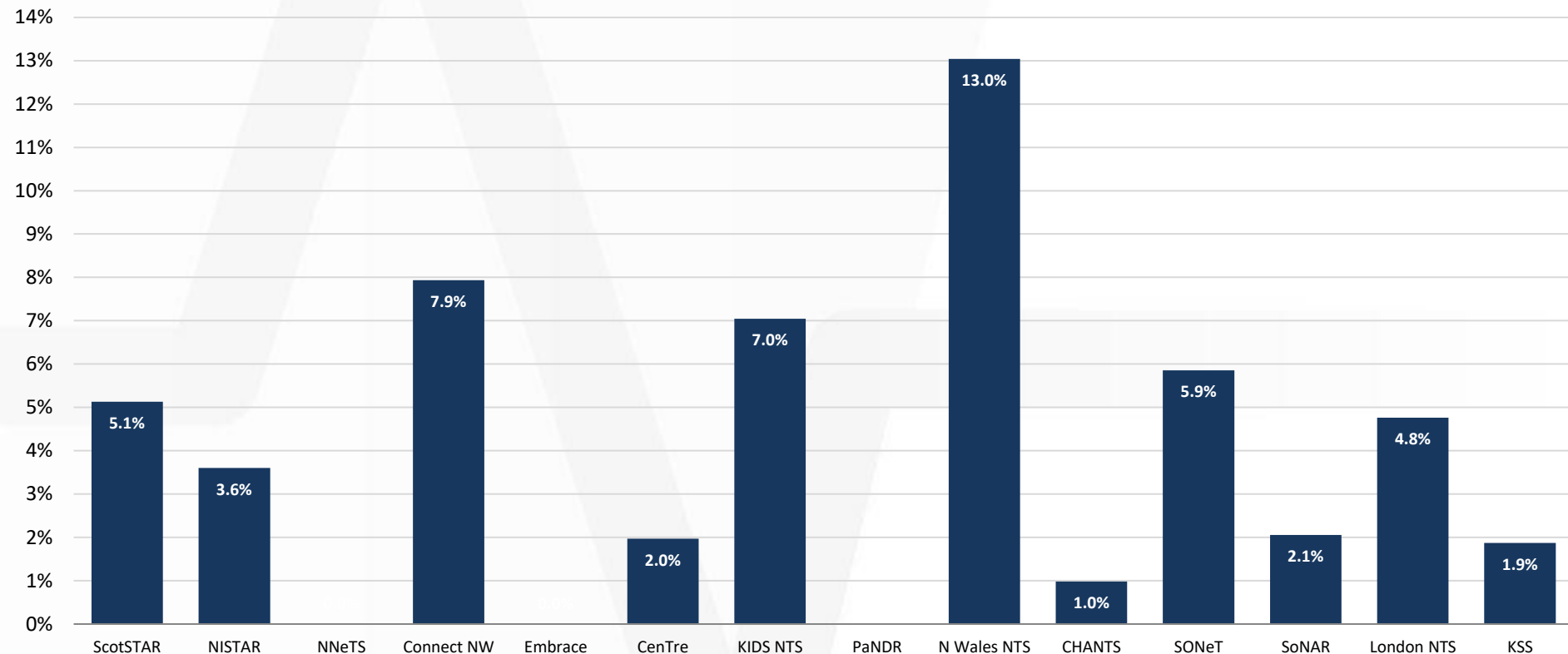


# HFOV Transfers as a percentage of ventilated transfers, by team Apr 2023 to Mar 2024



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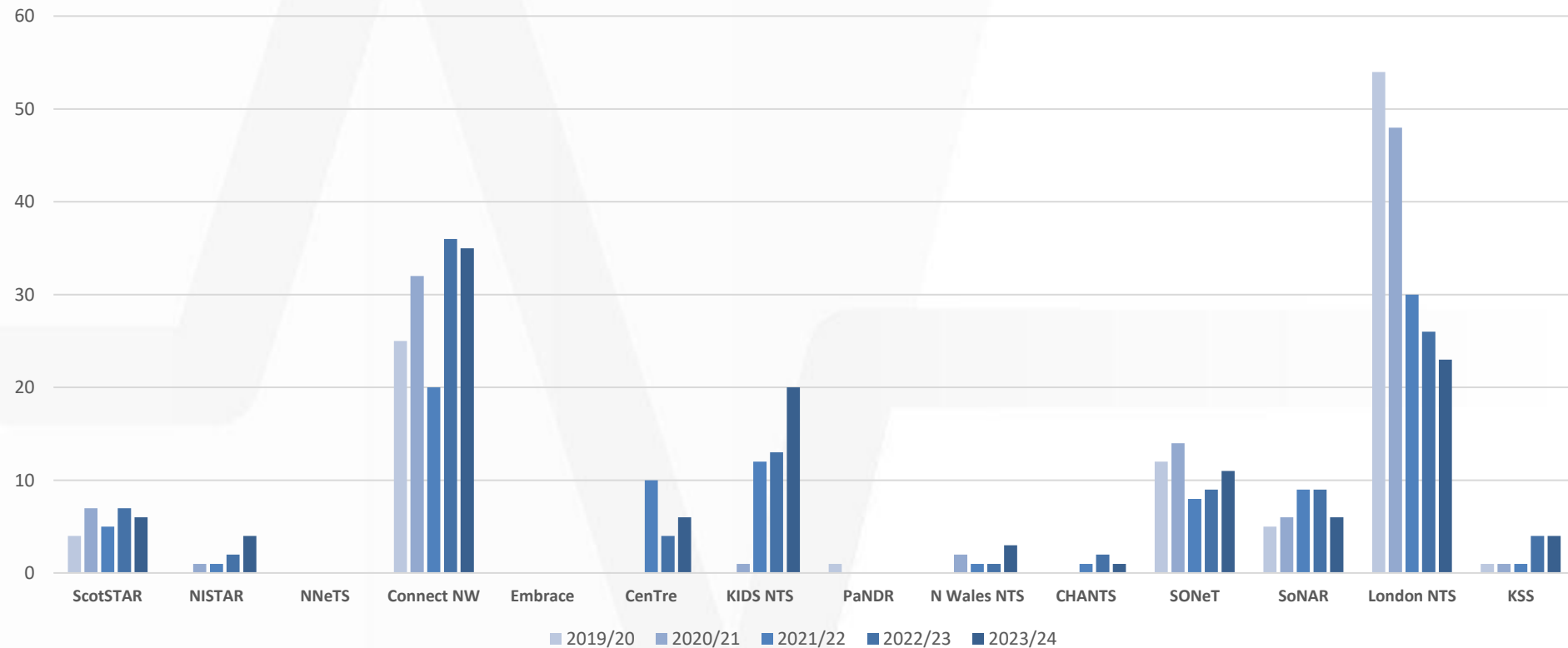


# Trends in numbers on HFOV by team, 2019/20 to 2023/24



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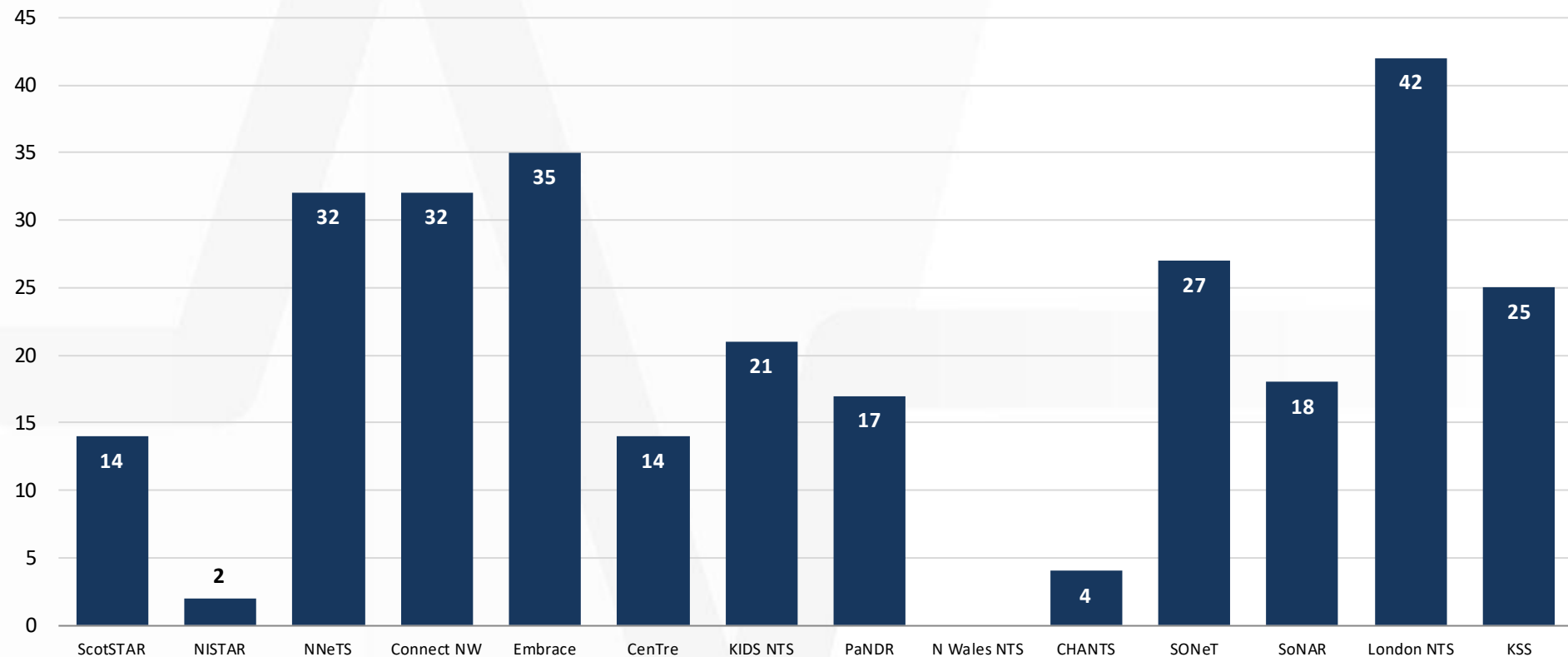
# Nitric Oxide Transfers by team

## Apr 2023 to Mar 2024



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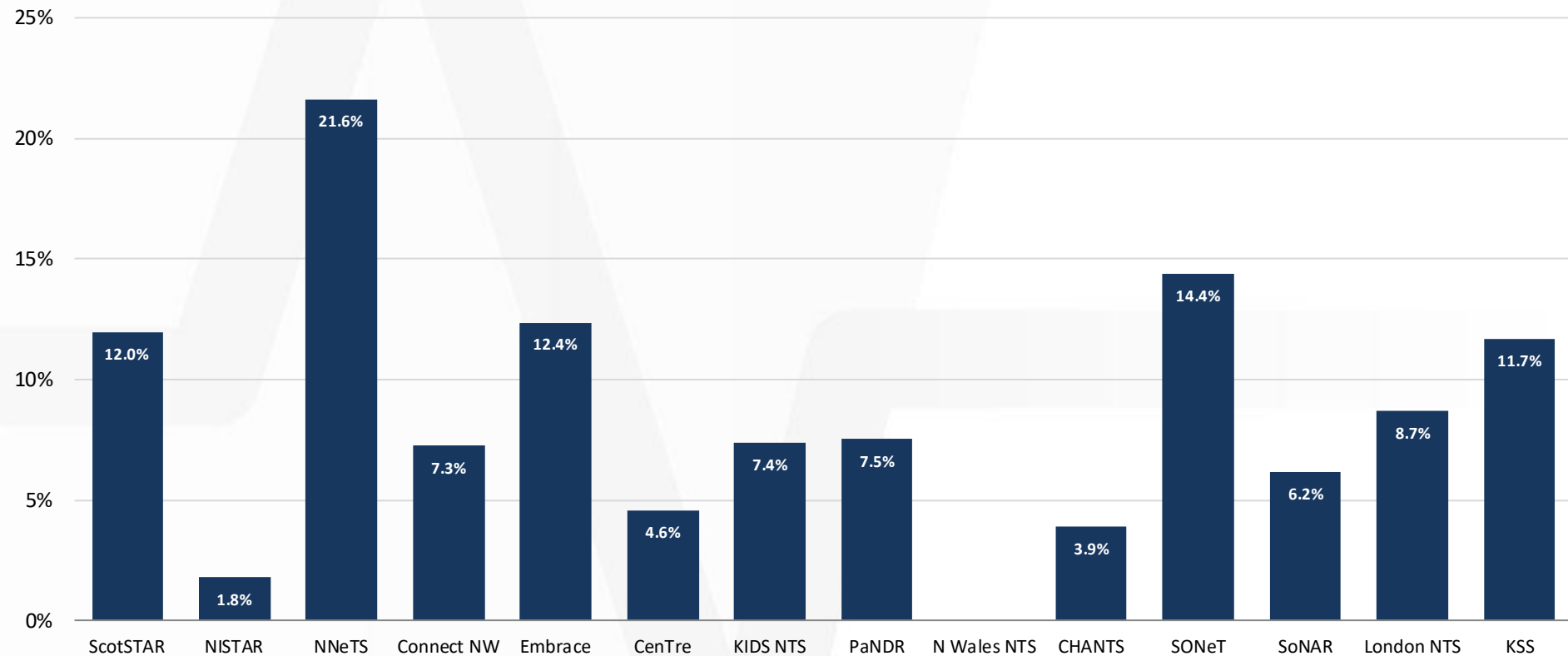


# Nitric Oxide Transfers as a percentage of ventilated transfers, by team Apr 2023 to Mar 2024



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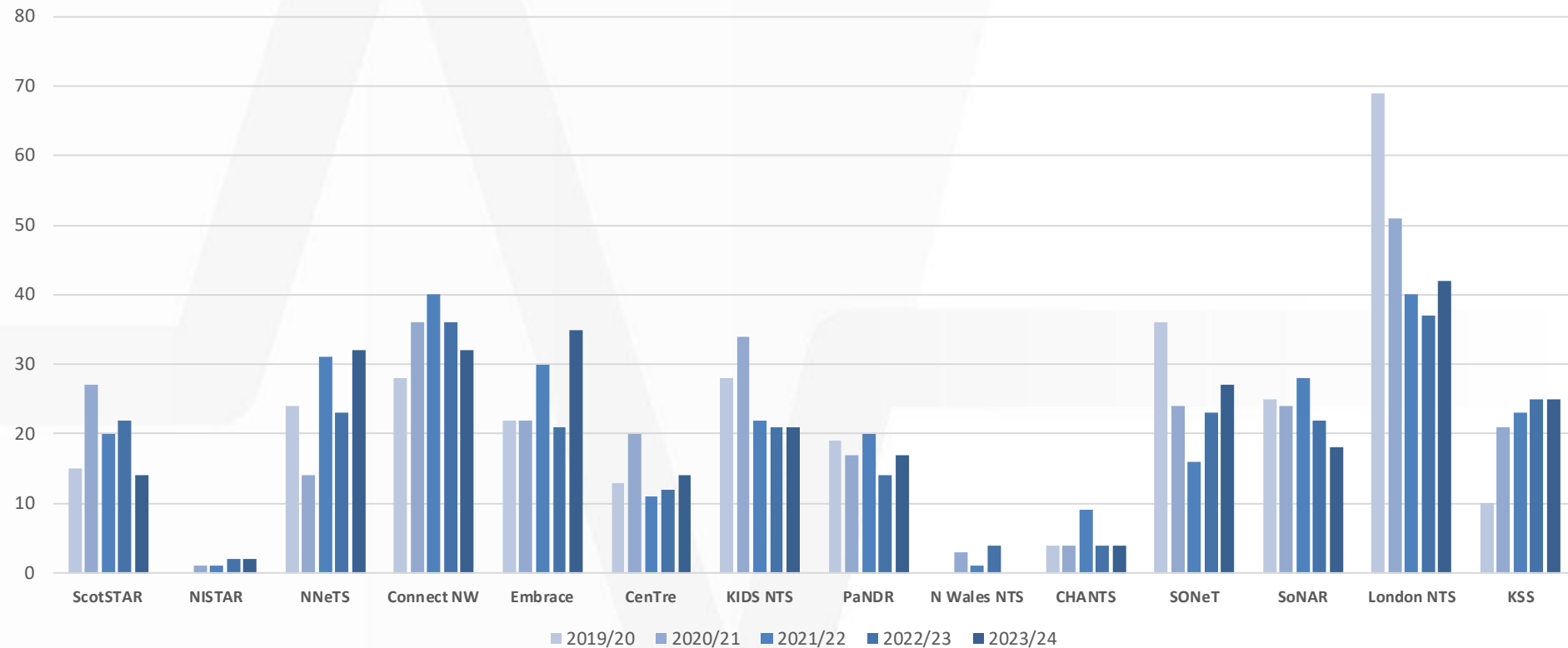


# Trends in numbers on Nitric Oxide by team, 2019/20 to 2023/24



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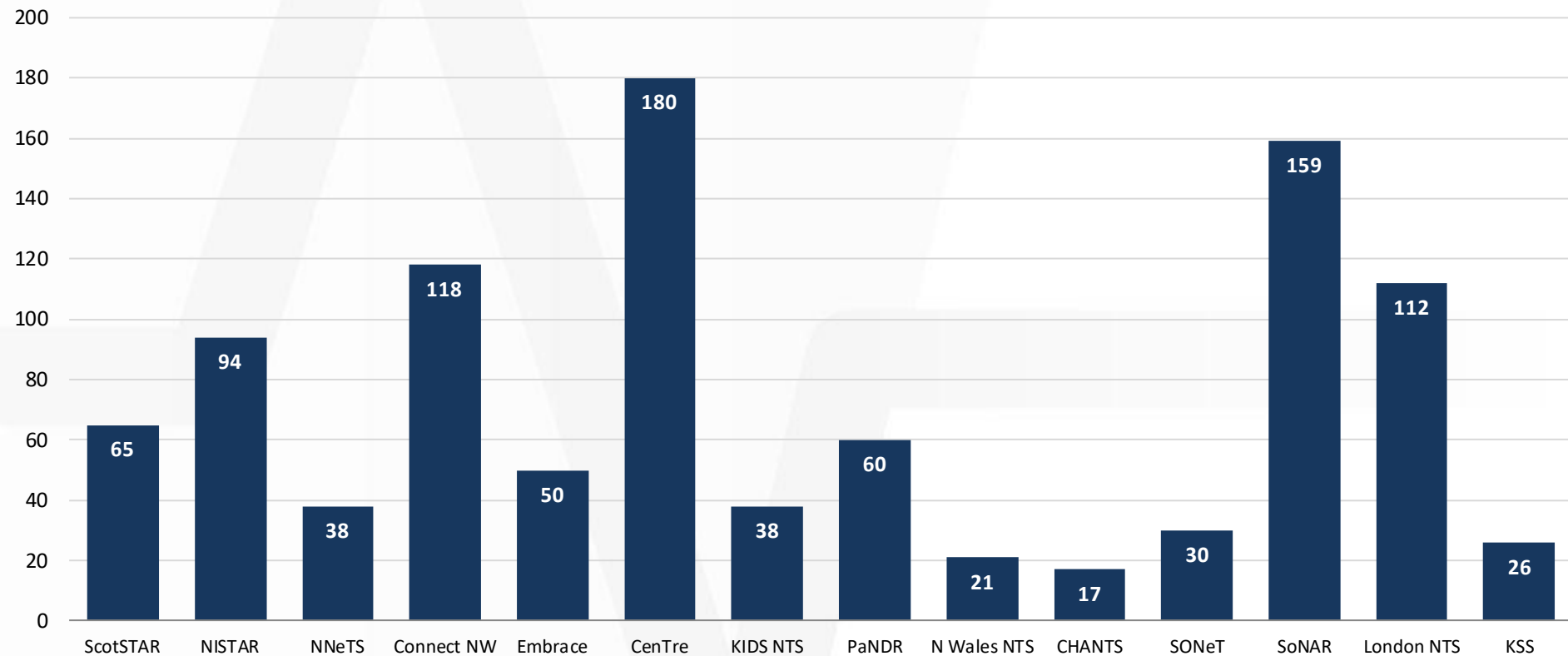
# CPAP Transfers by team

## Apr 2023 to Mar 2024



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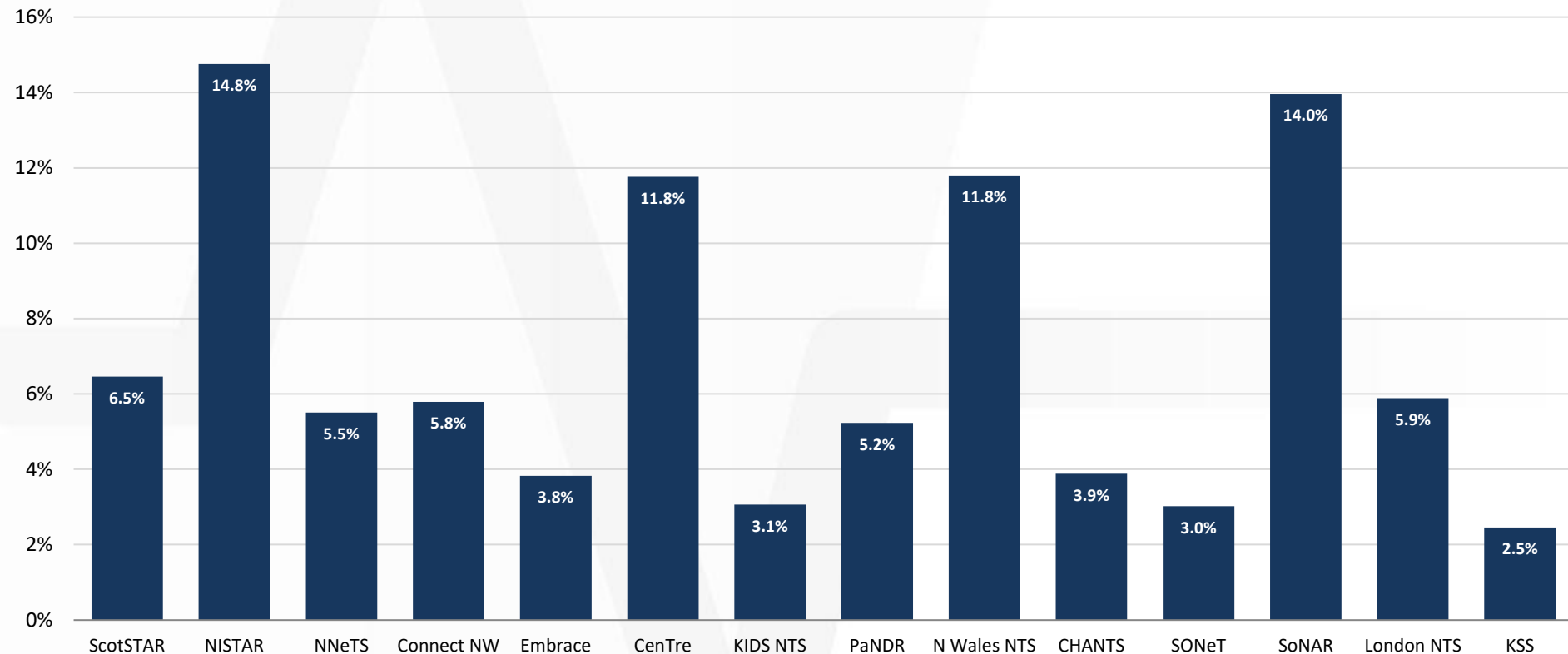


# CPAP Transfers as a percentage of total transfers, by team Apr 2023 to Mar 2024



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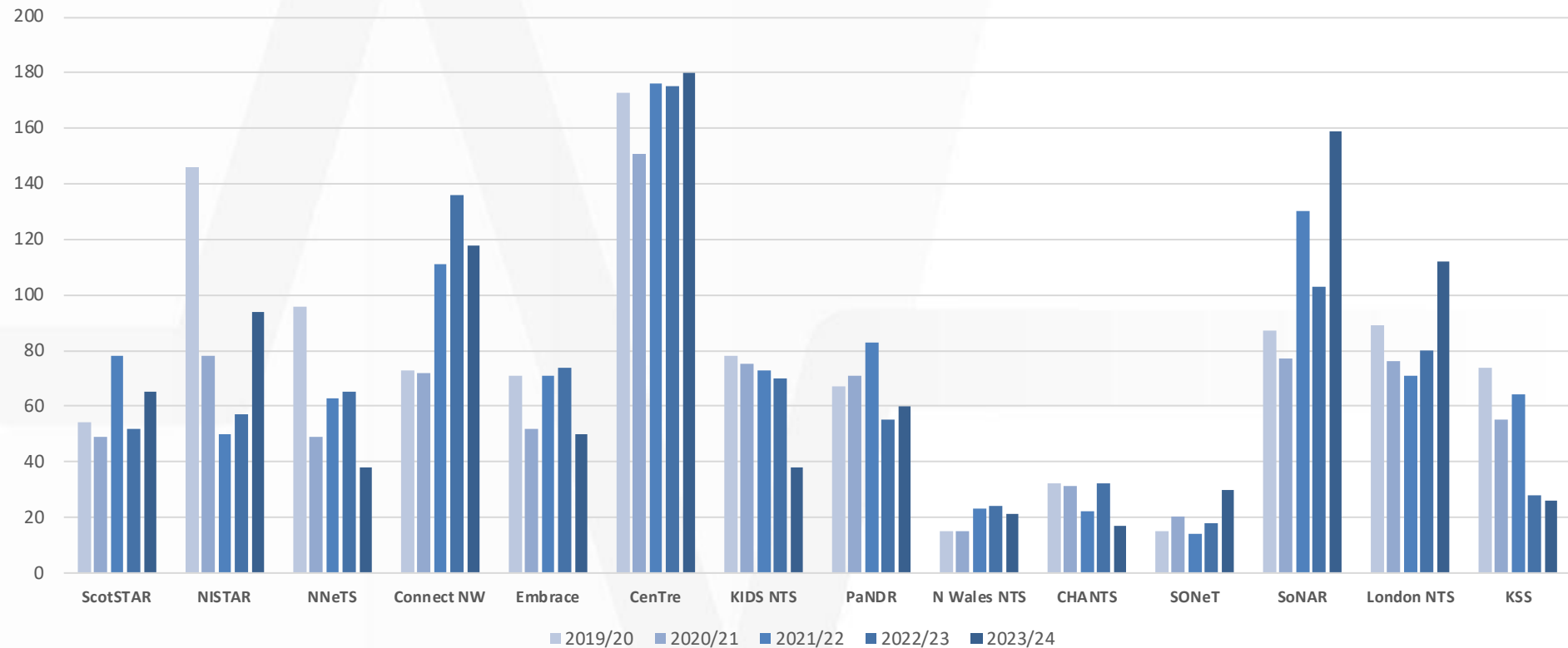


# Trends in numbers on CPAP by team, 2019/20 to 2023/24



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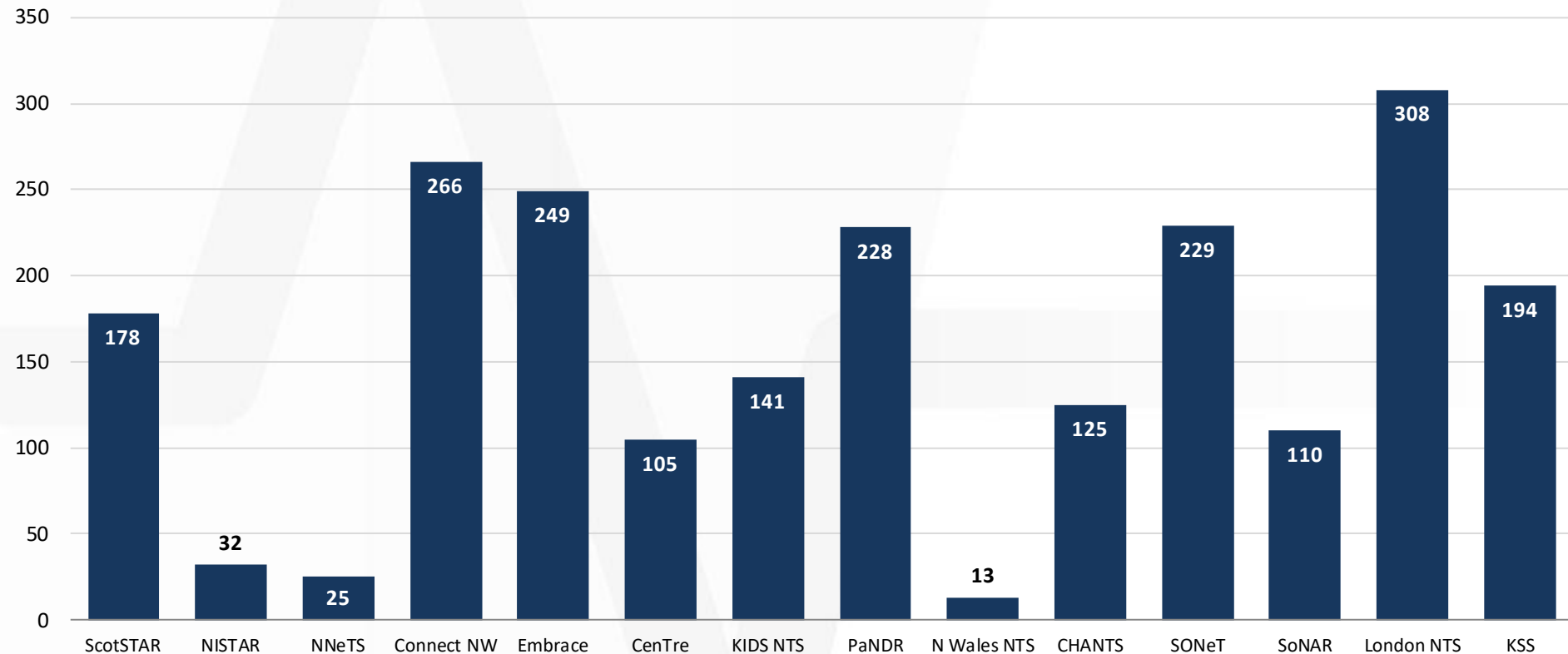


# High-flow Transfers by team Apr 2023 to Mar 2024



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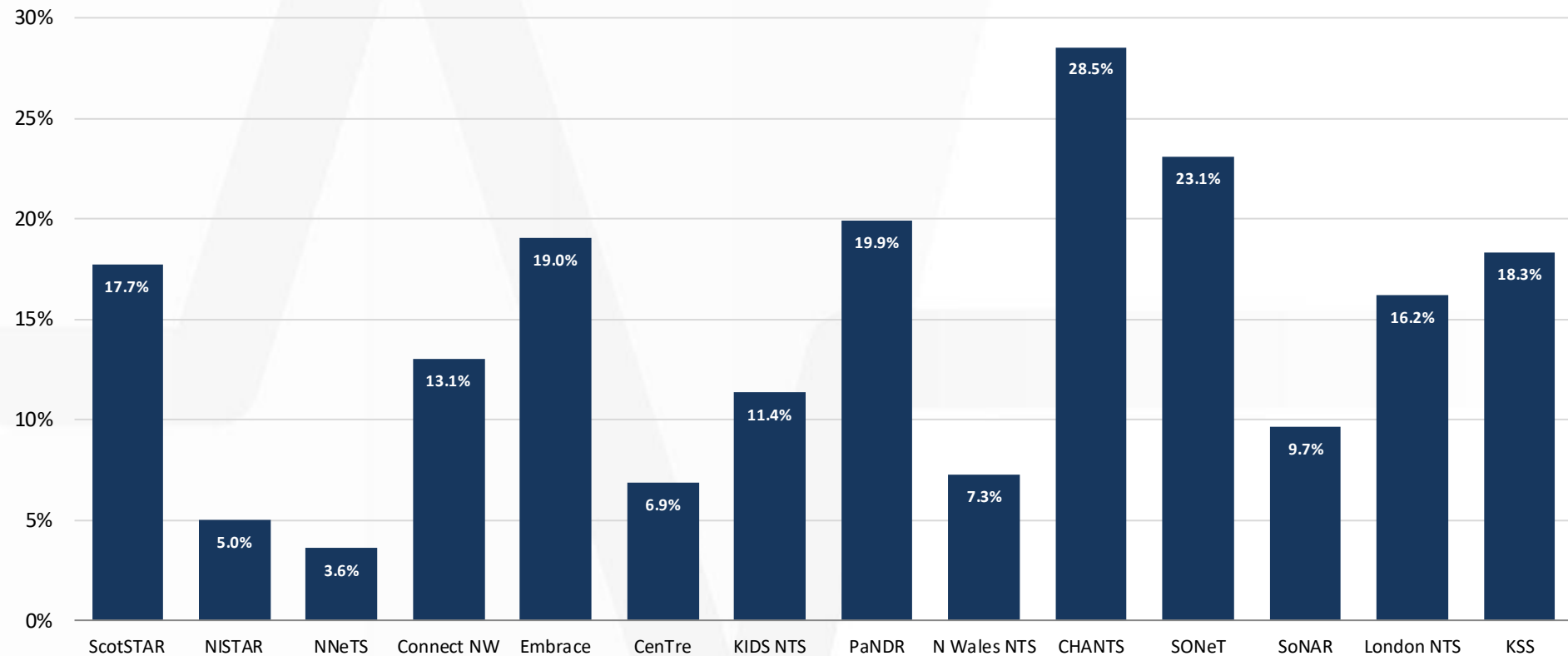


# High-flow Transfers as a percentage of total transfers, by team Apr 2023 to Mar 2024



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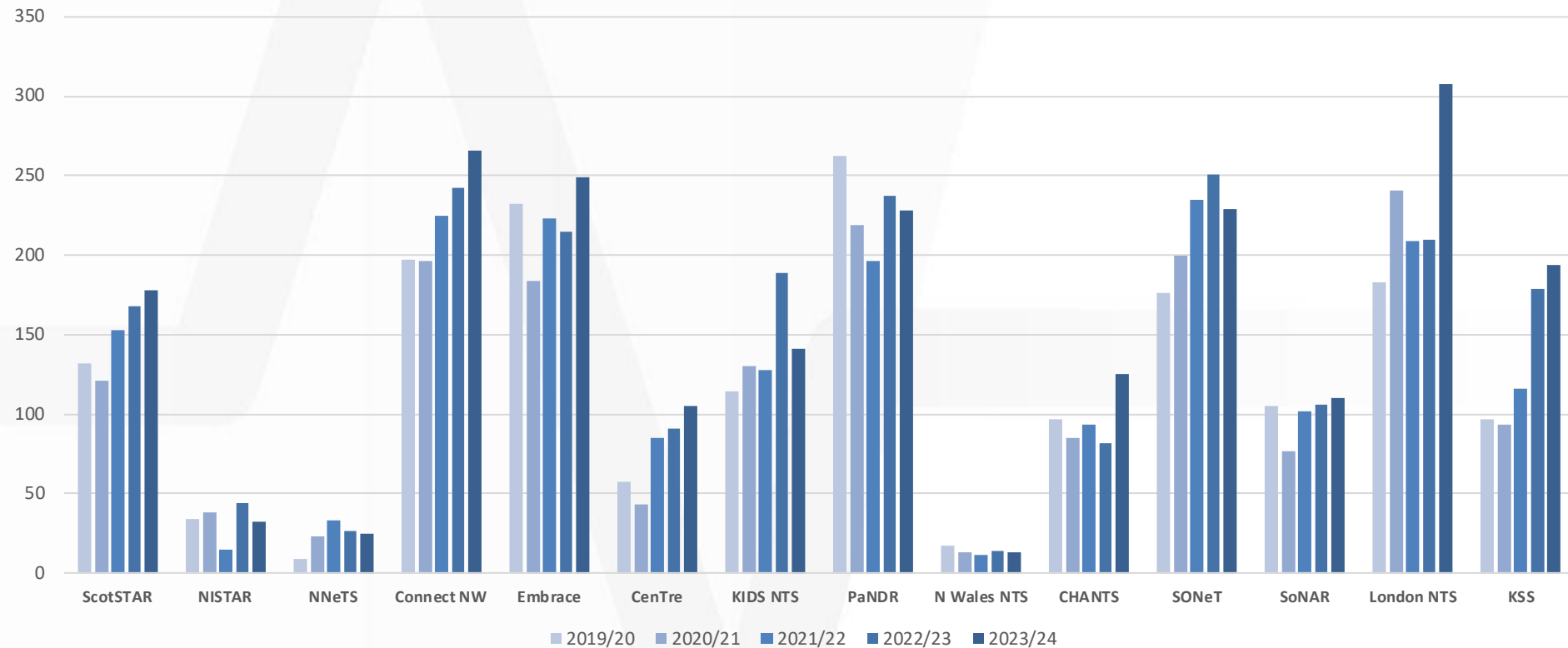


# Trends in numbers on High-flow by team, 2019/20 to 2023/24



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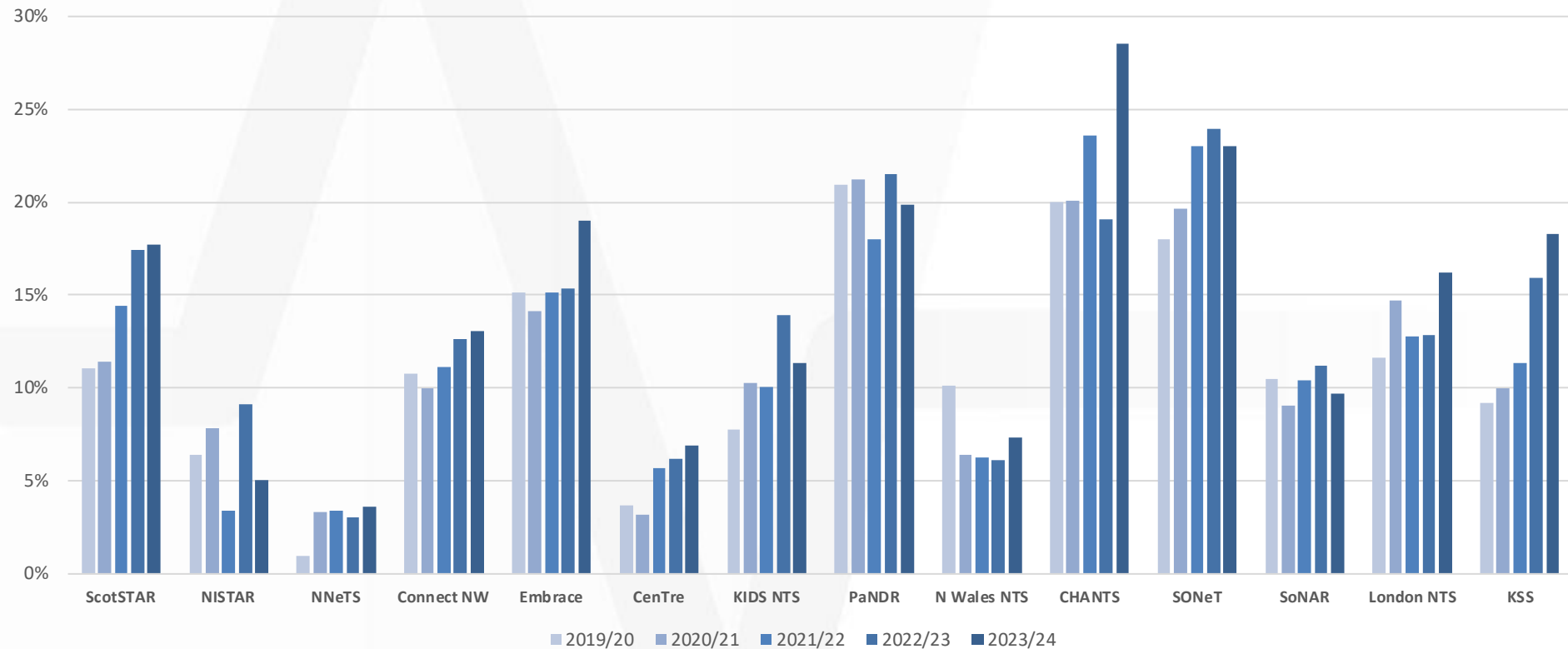


# Trends in High-flow transfers as a percentage of total transfers by team 2019/20 to 2023/24



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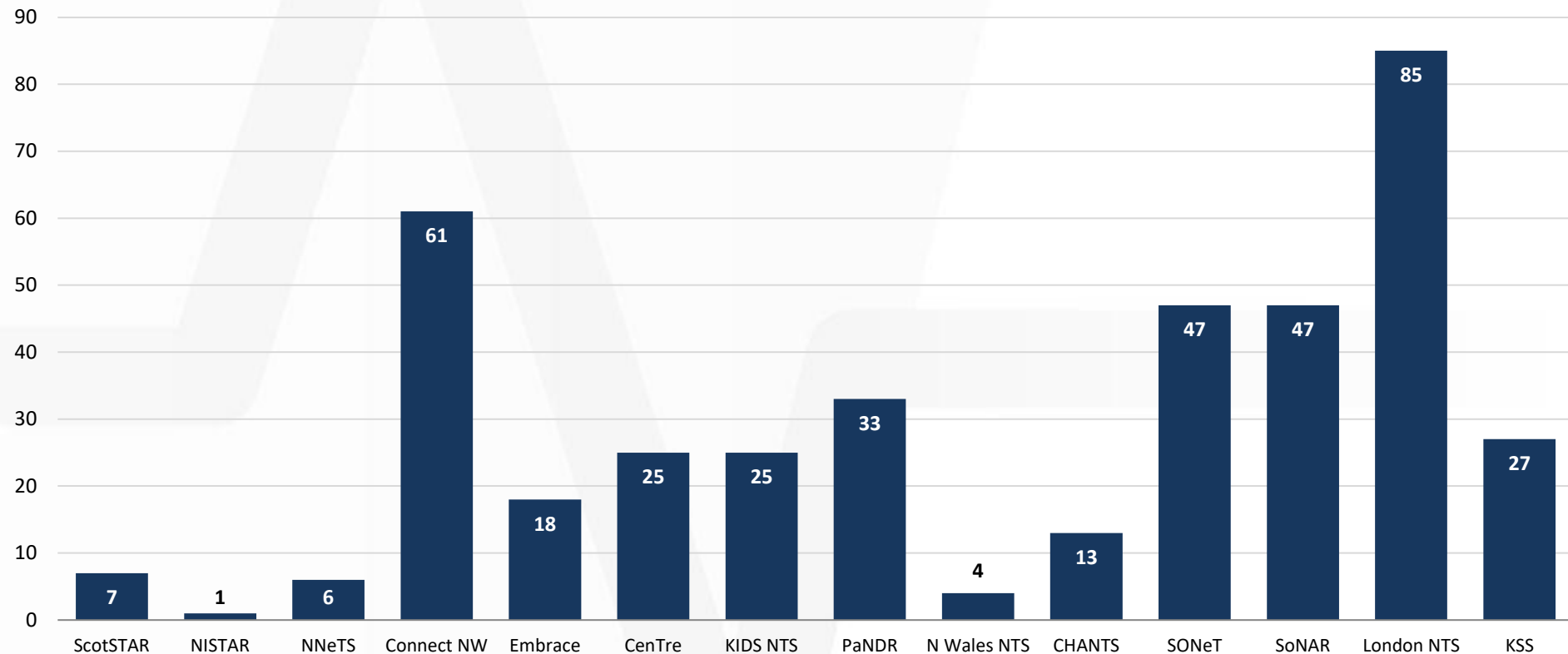


# Cooling Transfers/team Apr 2023 to Mar 2024



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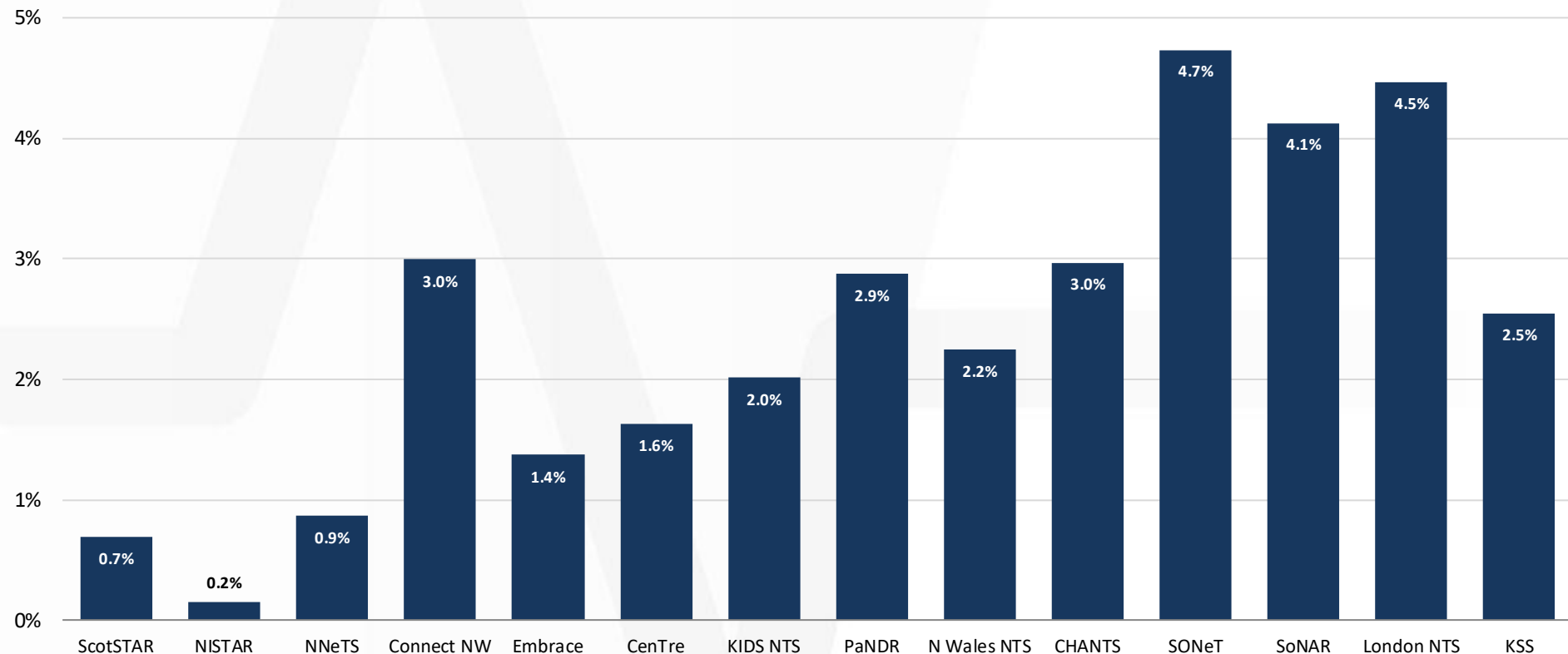


# Cooling Transfers as a percentage of total transfers, by team Apr 2023 to Mar 2024



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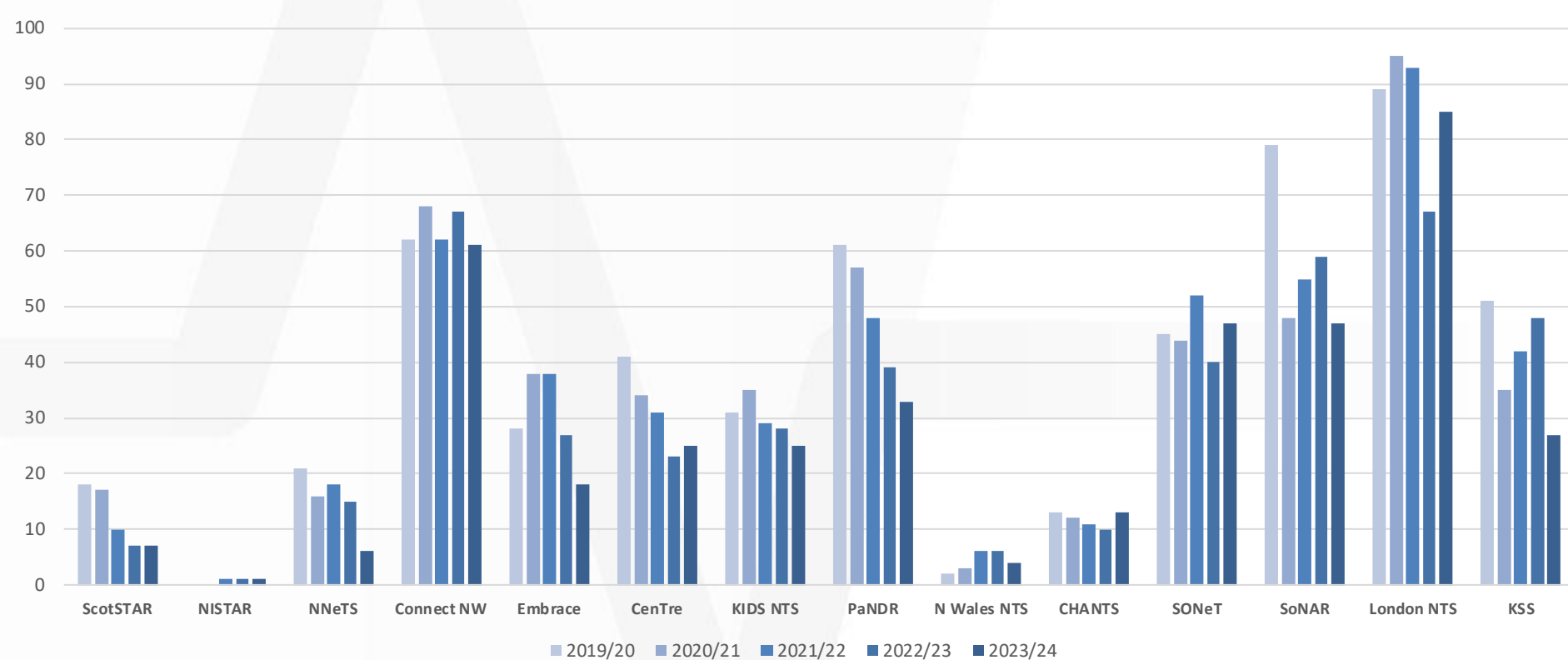


# Trends in numbers cooled in transfer, by team, 2019/20 to 2023/24



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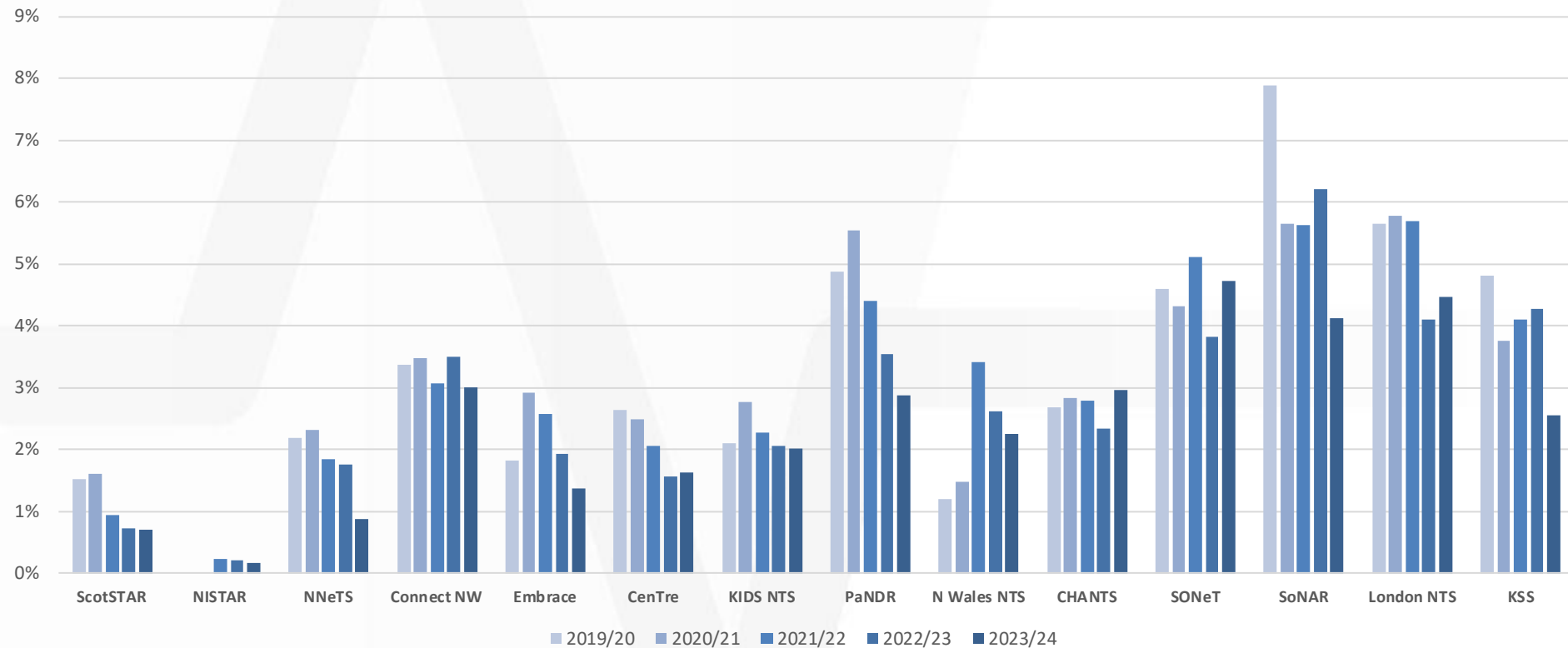


# Trends in Cooling transfers as a percentage of total transfers by team 2019/20 to 2023/24



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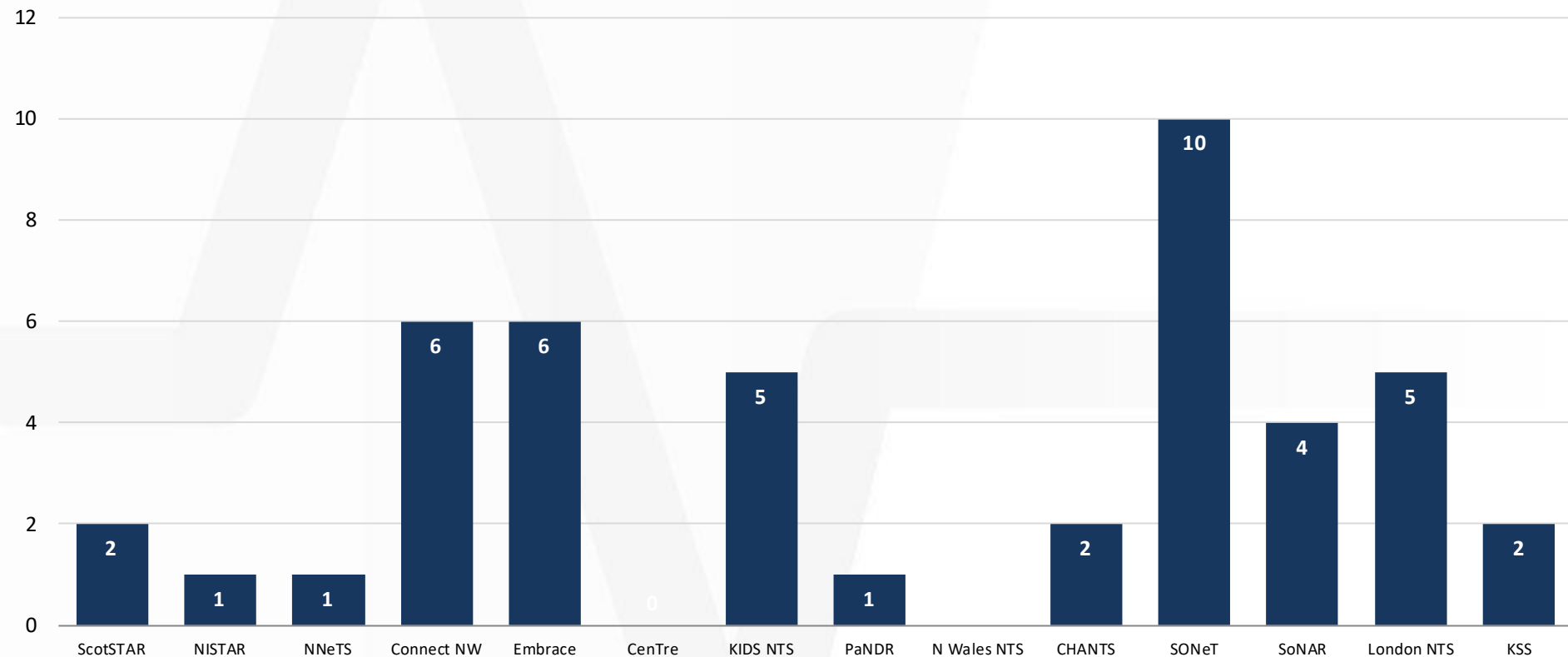


# Transfers for Palliative care by team Apr 2023 to Mar 2024



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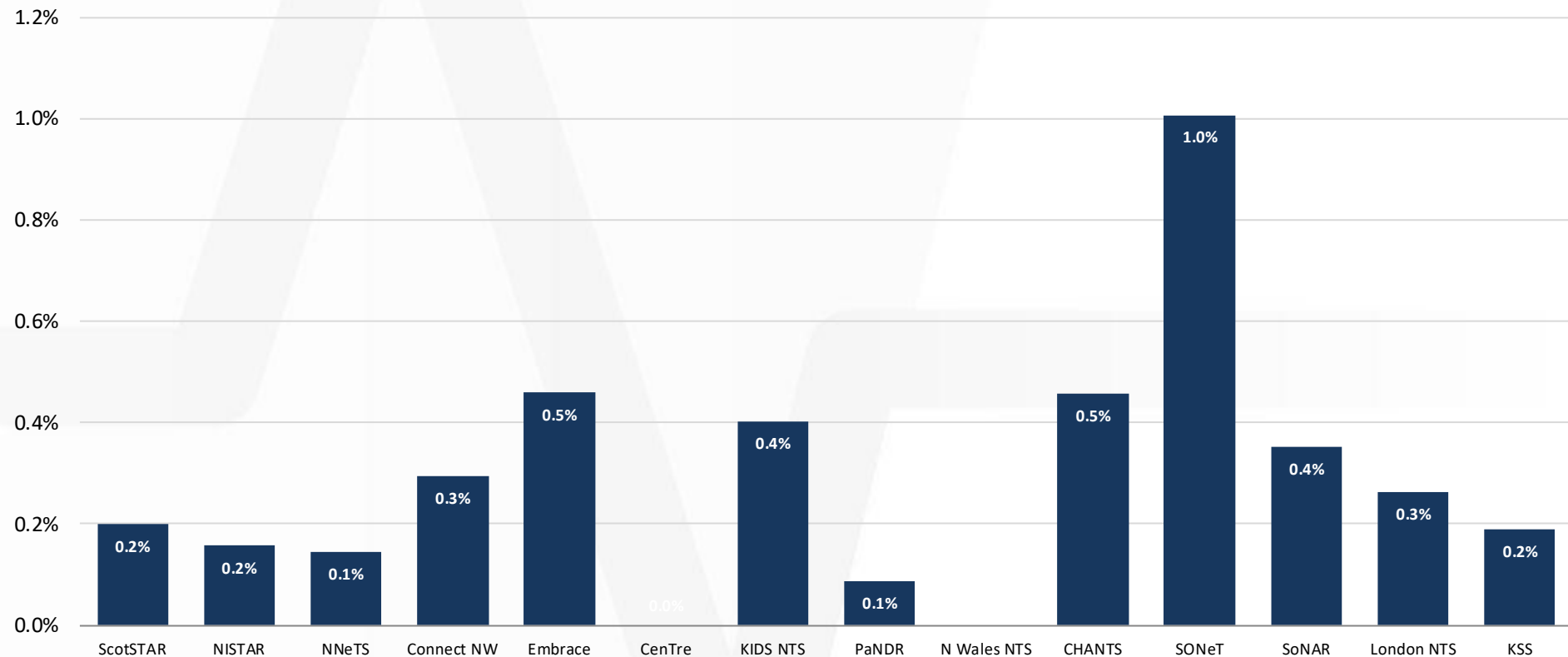


# Transfers for Palliative care as a percentage of total transfers, by team Apr 2023 to Mar 2024



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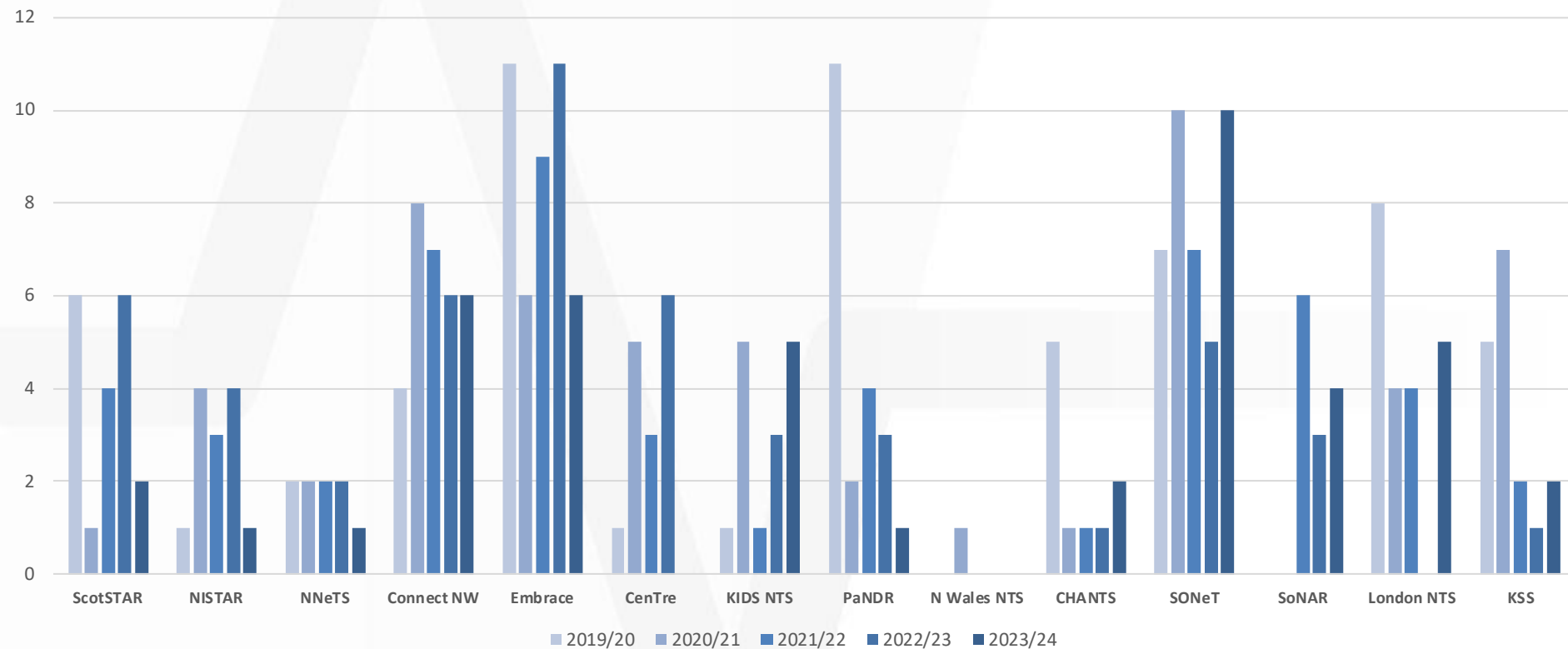


# Trends in numbers of transfers for Palliative care by team, 2019/20 to 2023/24



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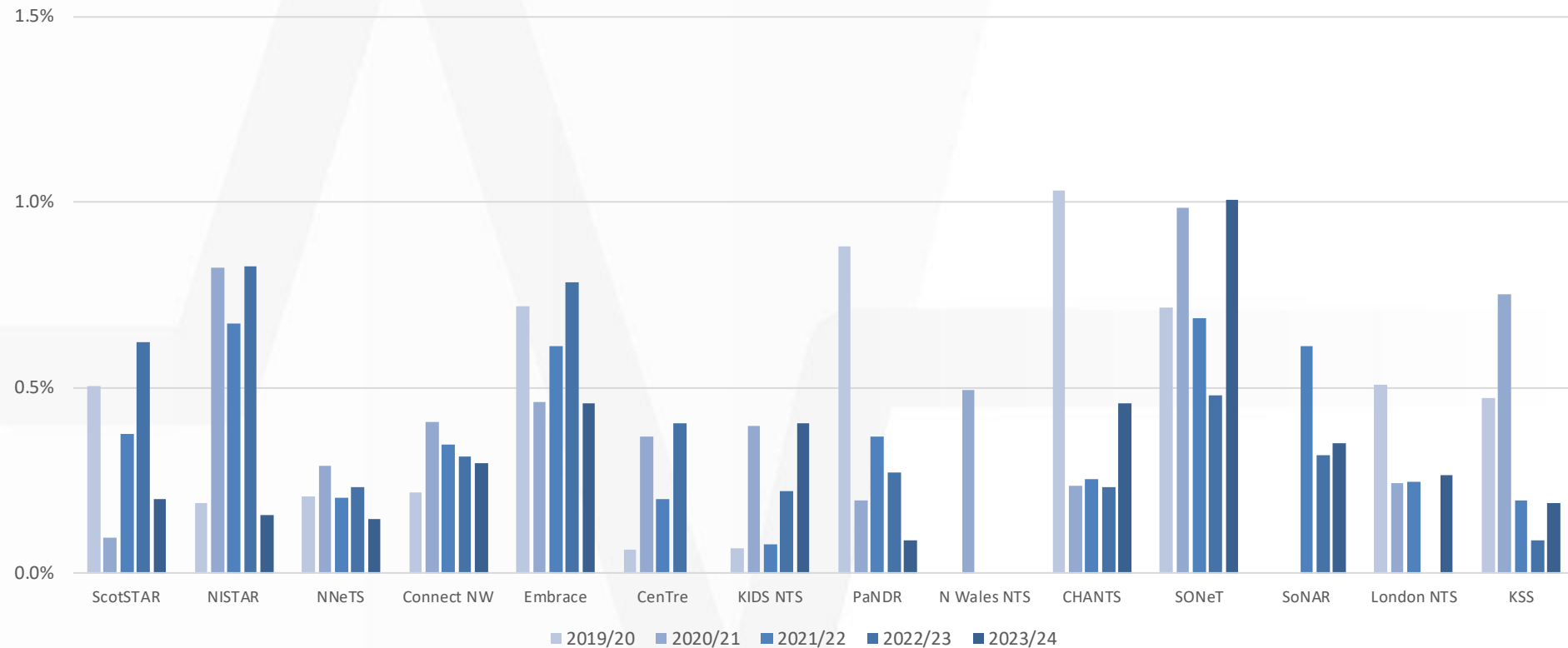


# Trends in Palliative transfers as a percentage of total transfers by team 2019/20 to 2023/24



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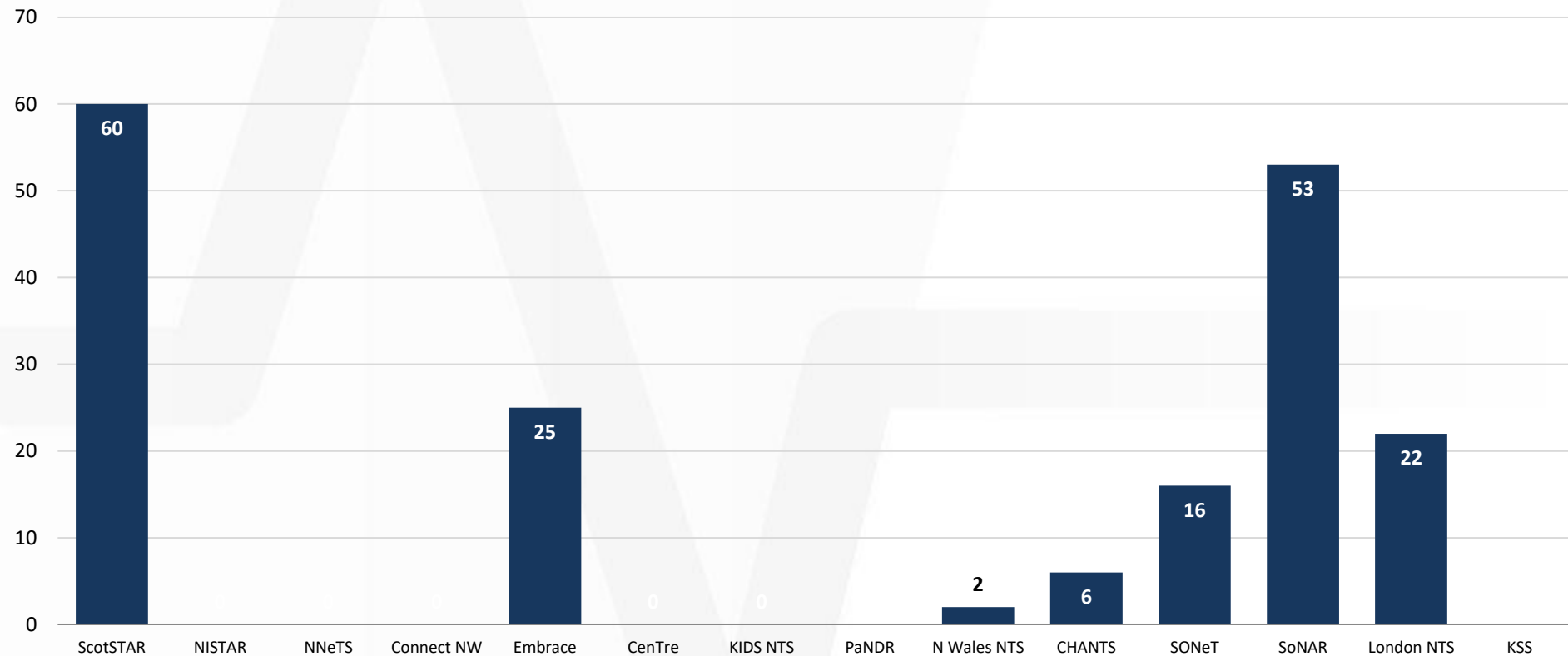


# Air Transfers by team Apr 2023 to Mar 2024



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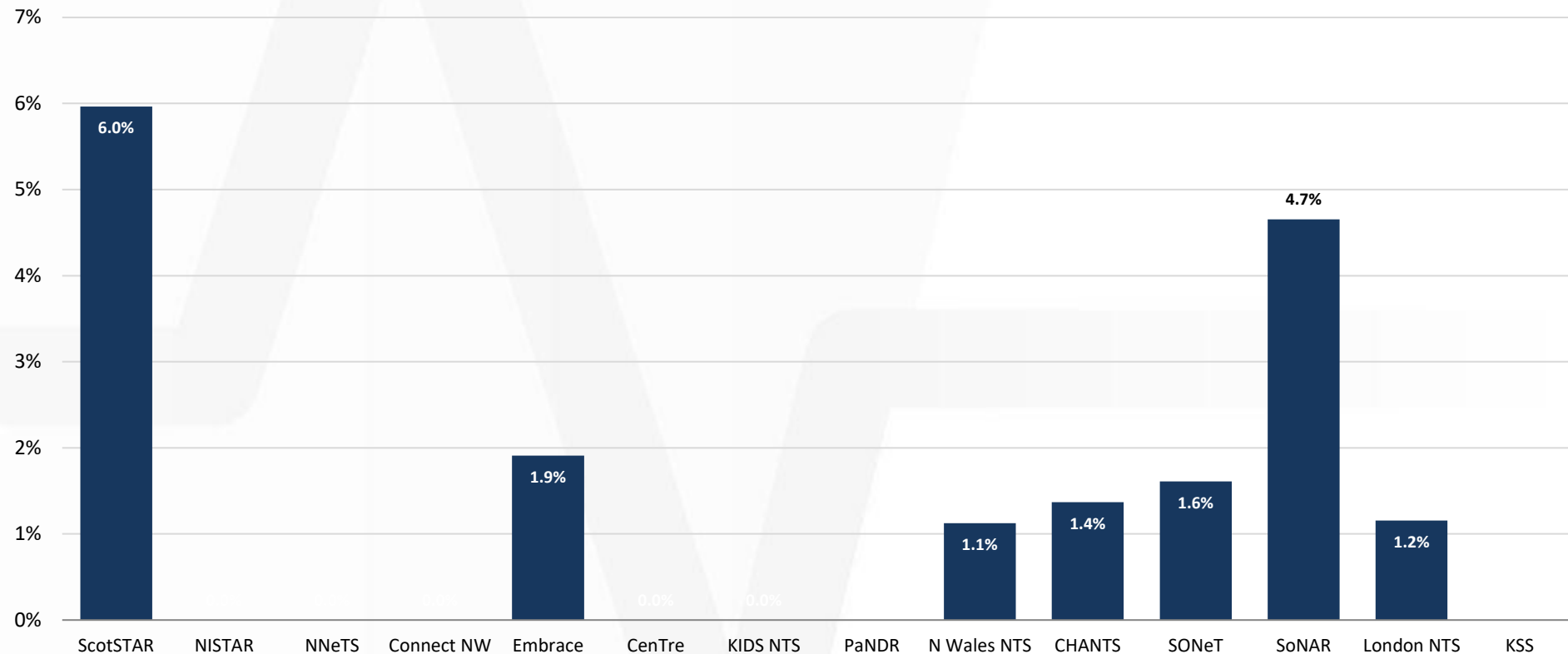


# Air Transfers as a percentage of total transfers, by team Apr 2023 to Mar 2024



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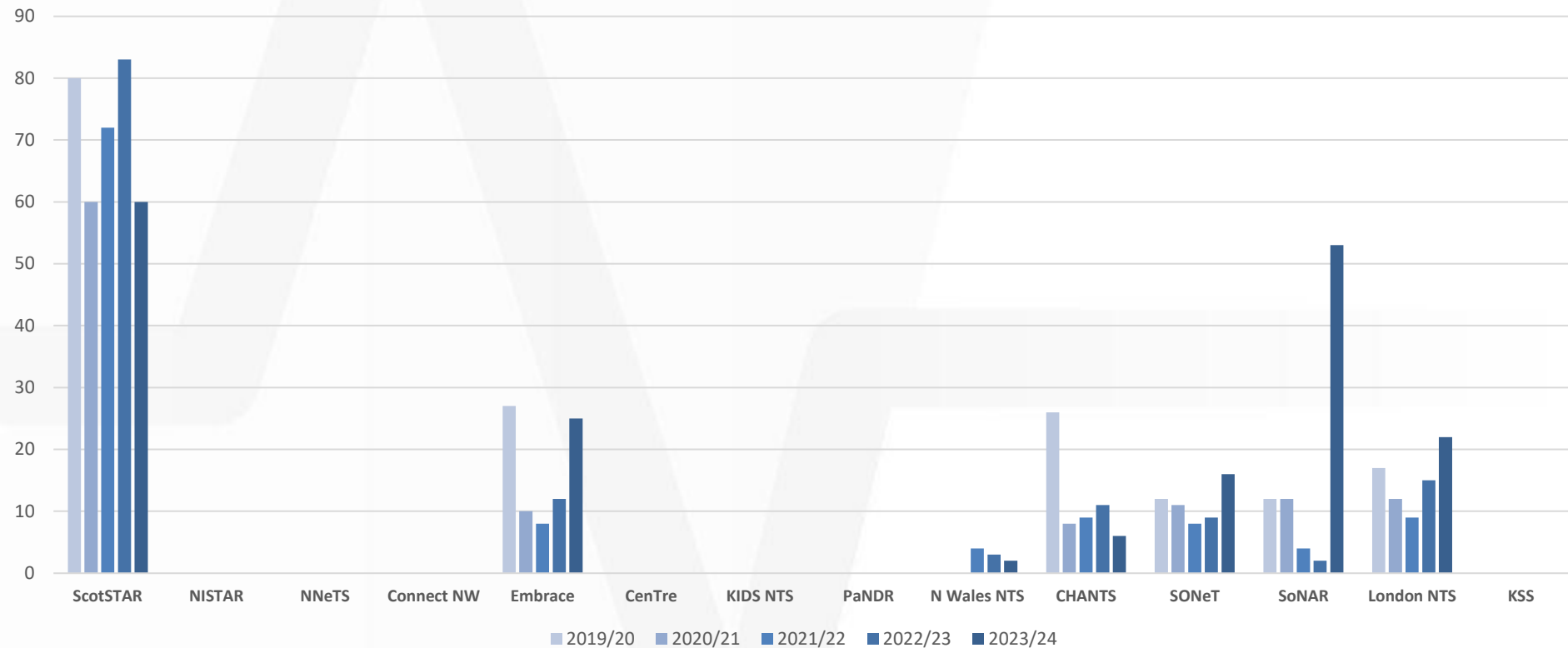


# Trends in numbers of Air transfers by team, 2019/20 to 2023/24



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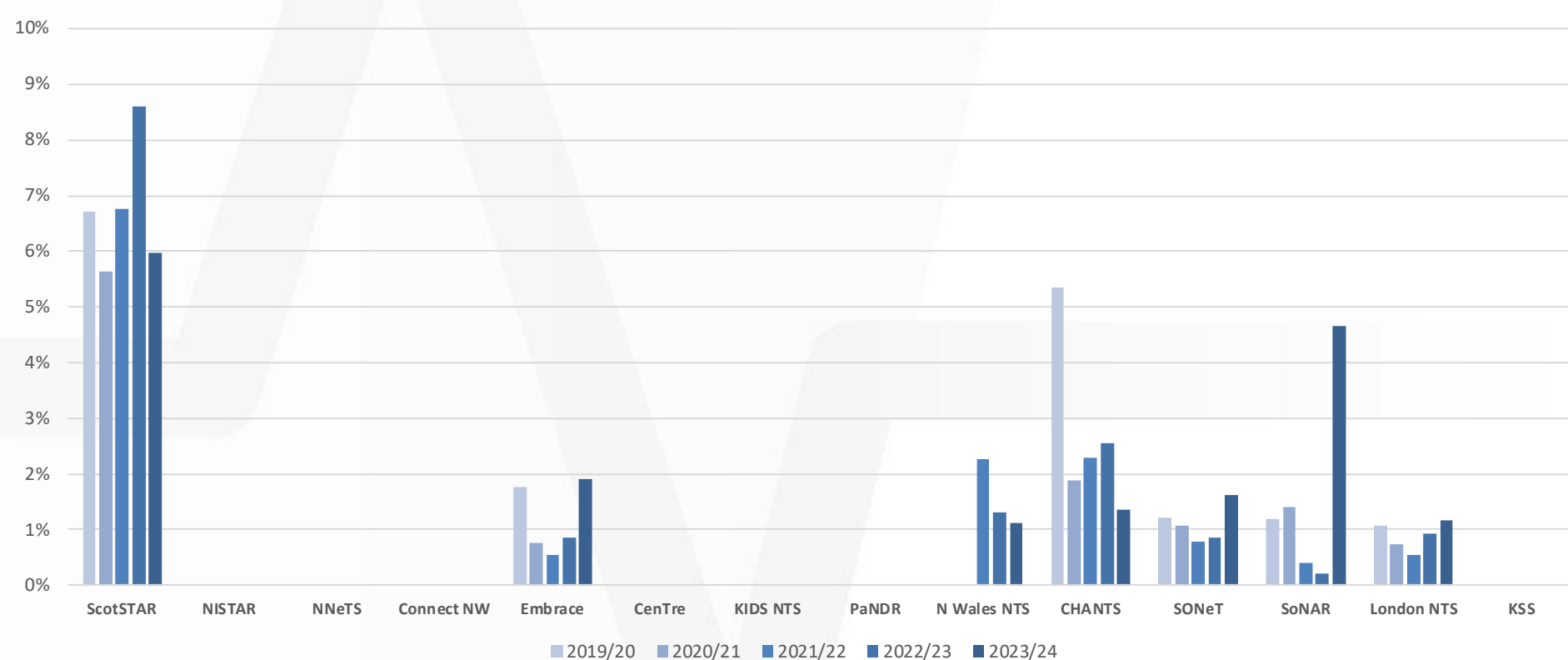


# Trends in Air transfers as a percentage of total transfers by team 2019/20 to 2023/24



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# Newborn Premature Infant Workload



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## Data on

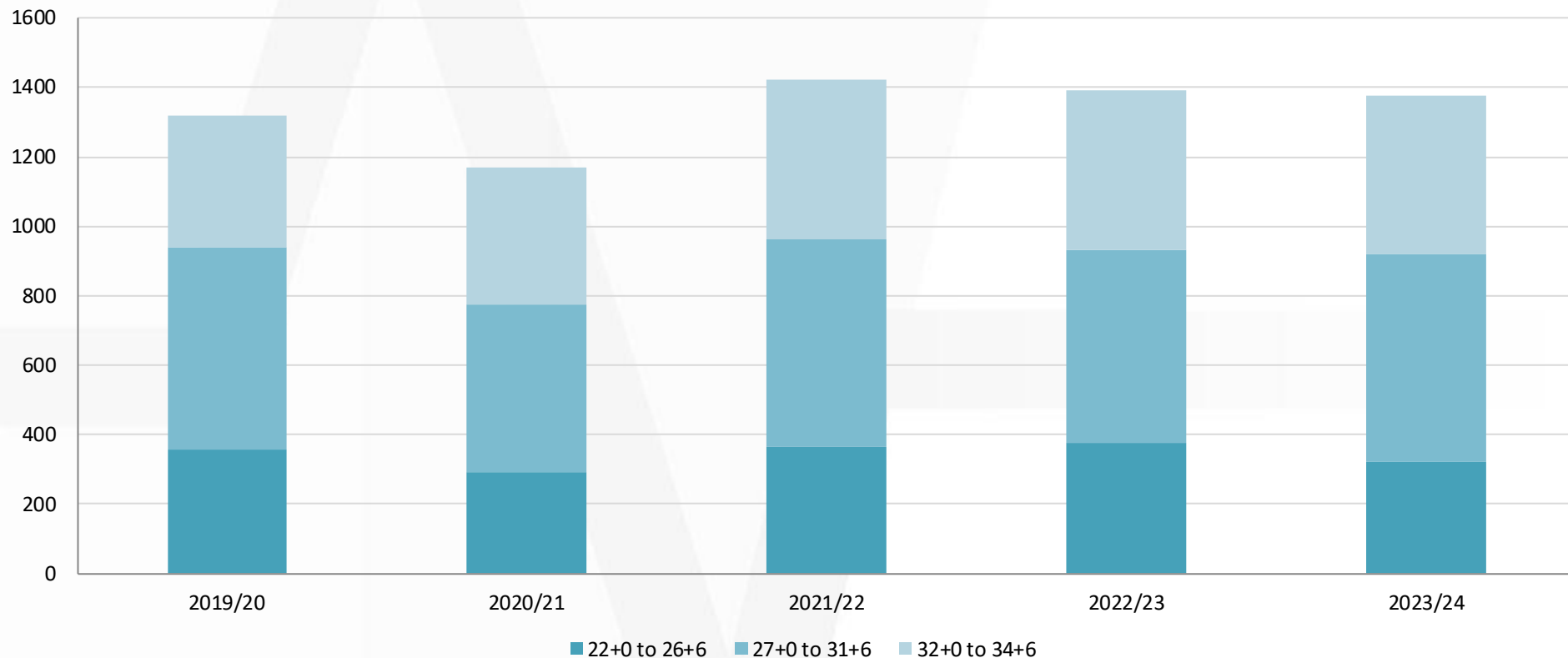
- Transfer on first 3 days of birth
  - 22<sup>+0</sup> weeks to 26<sup>+6</sup> weeks (from 2019/20)
  - 27<sup>+0</sup> weeks to 31<sup>+6</sup> weeks
  - 32<sup>+0</sup> weeks to 36<sup>+6</sup> weeks
- Operational reason for transfer
  - Uplift
  - Capacity
  - Repatriation

# Premature infants transferred on the first 3 days of life for **Uplift of care** 2019 /20 to 2023/24



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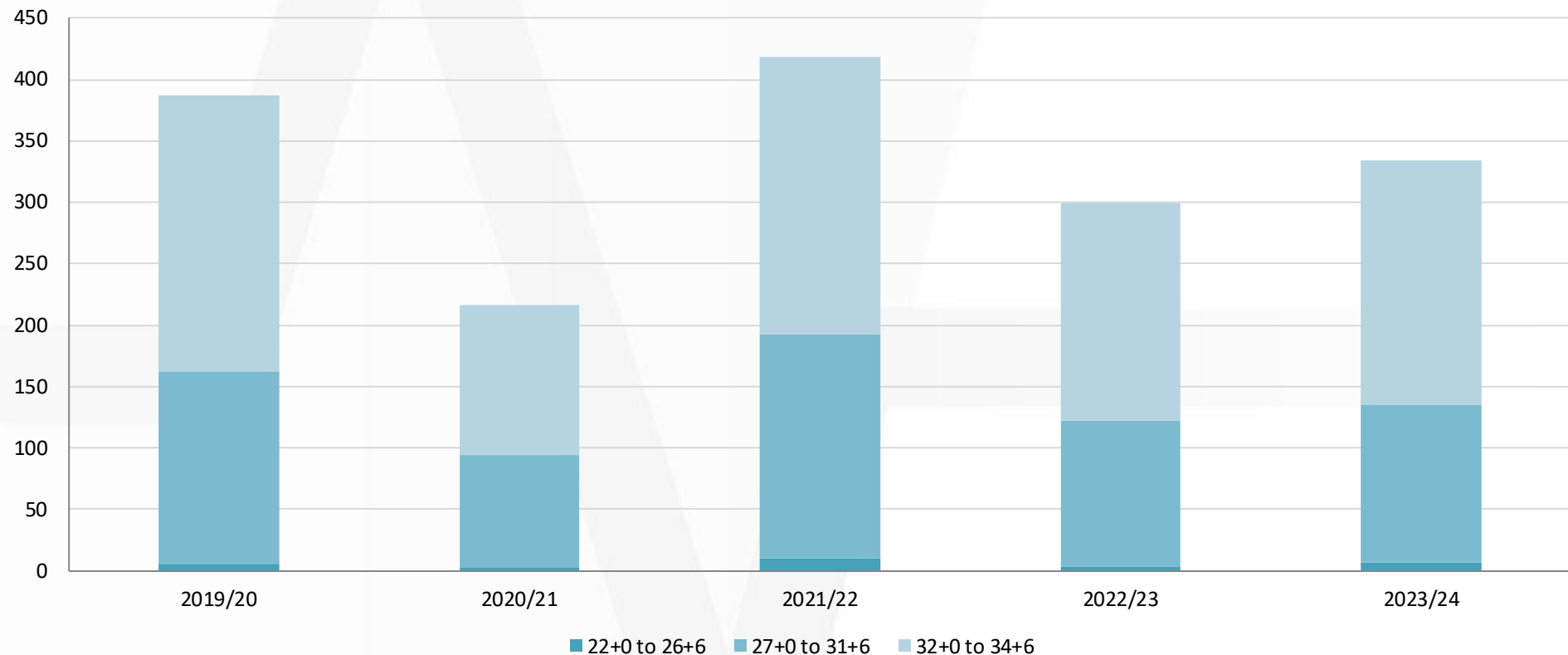


# Premature infants transferred on the first 3 days of life for **Capacity** 2019/20 to 2023/24



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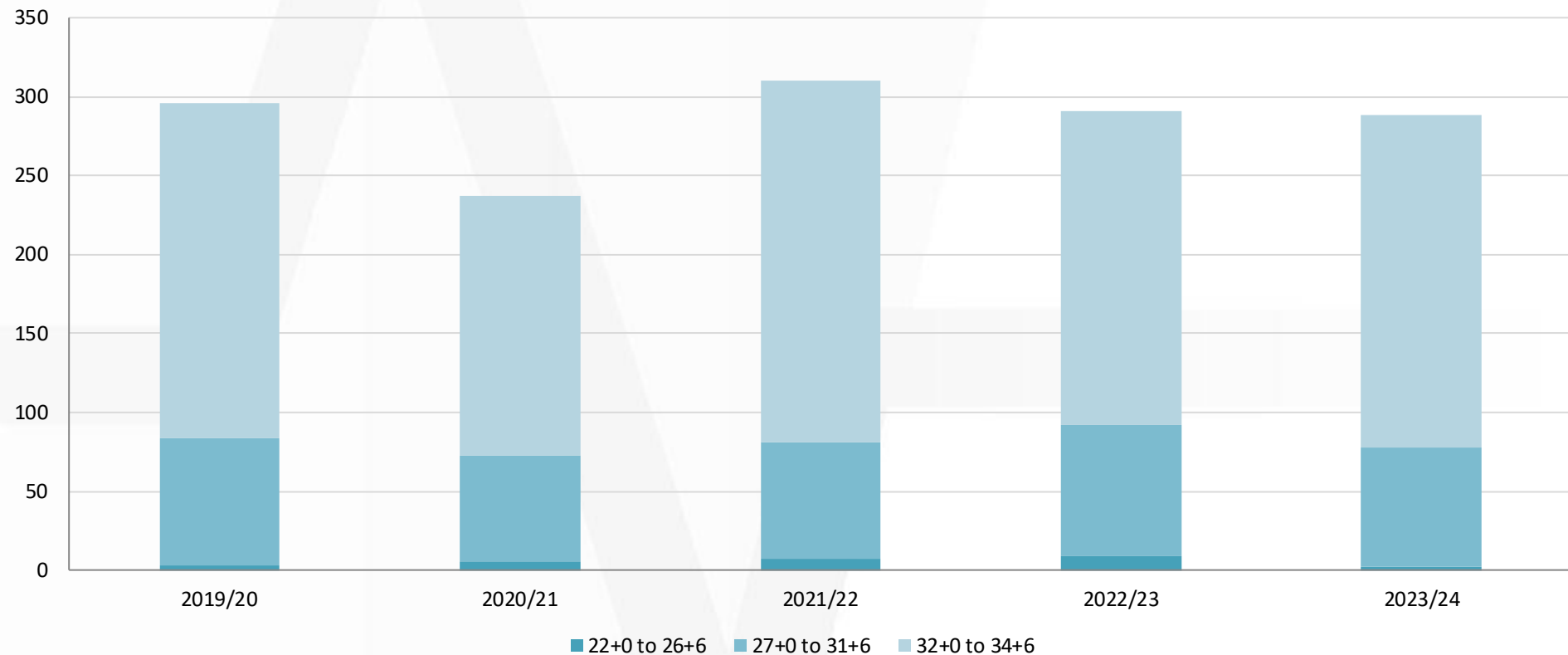


# Premature infants transferred on the first 3 days of life for **Repatriation** 2019/20 to 2023/24



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# Thermal control



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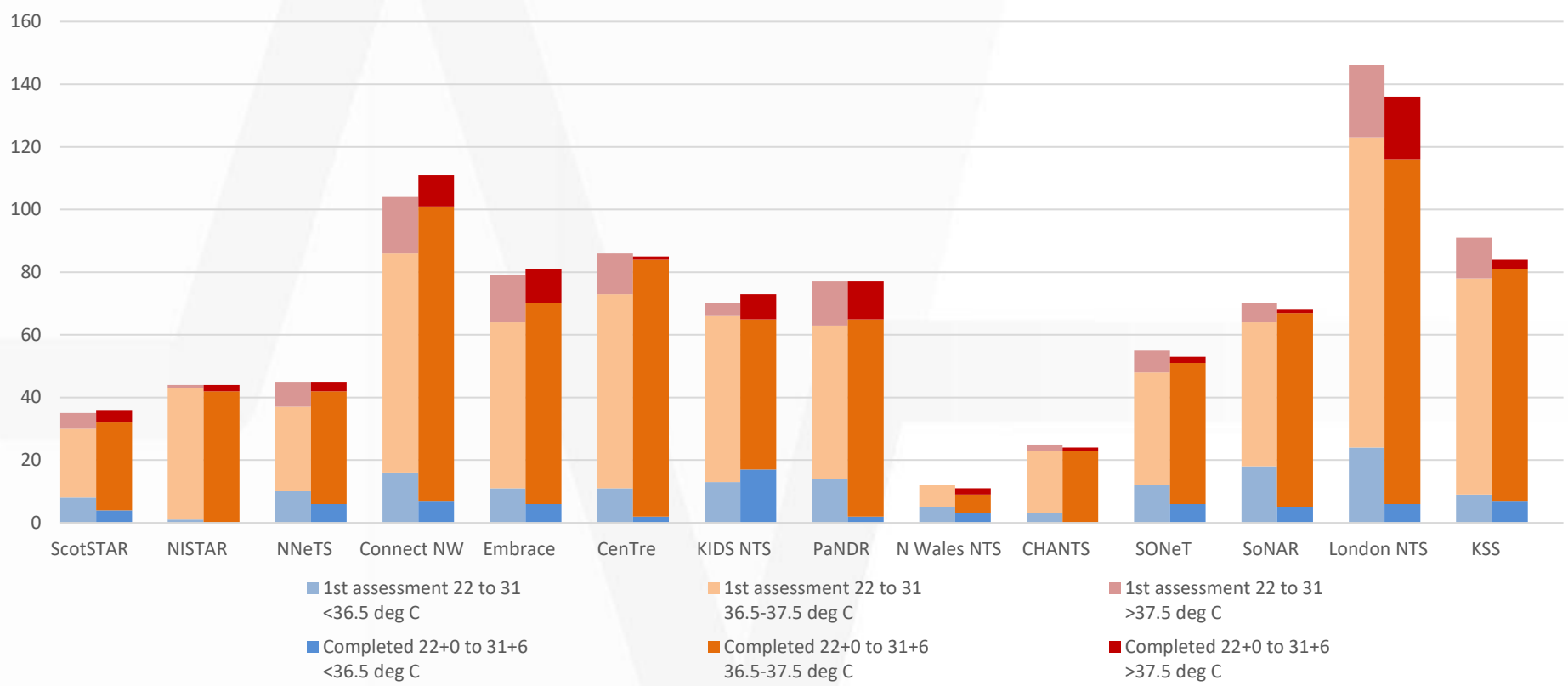




# 1.3 Newborn Infants 22 to 31<sup>+6</sup> weeks

## Temperatures on arrival and completion of transfer

### Apr 2023 to Mar 2024



# 1.3 Newborn Infants 22 to 31<sup>+6</sup> weeks

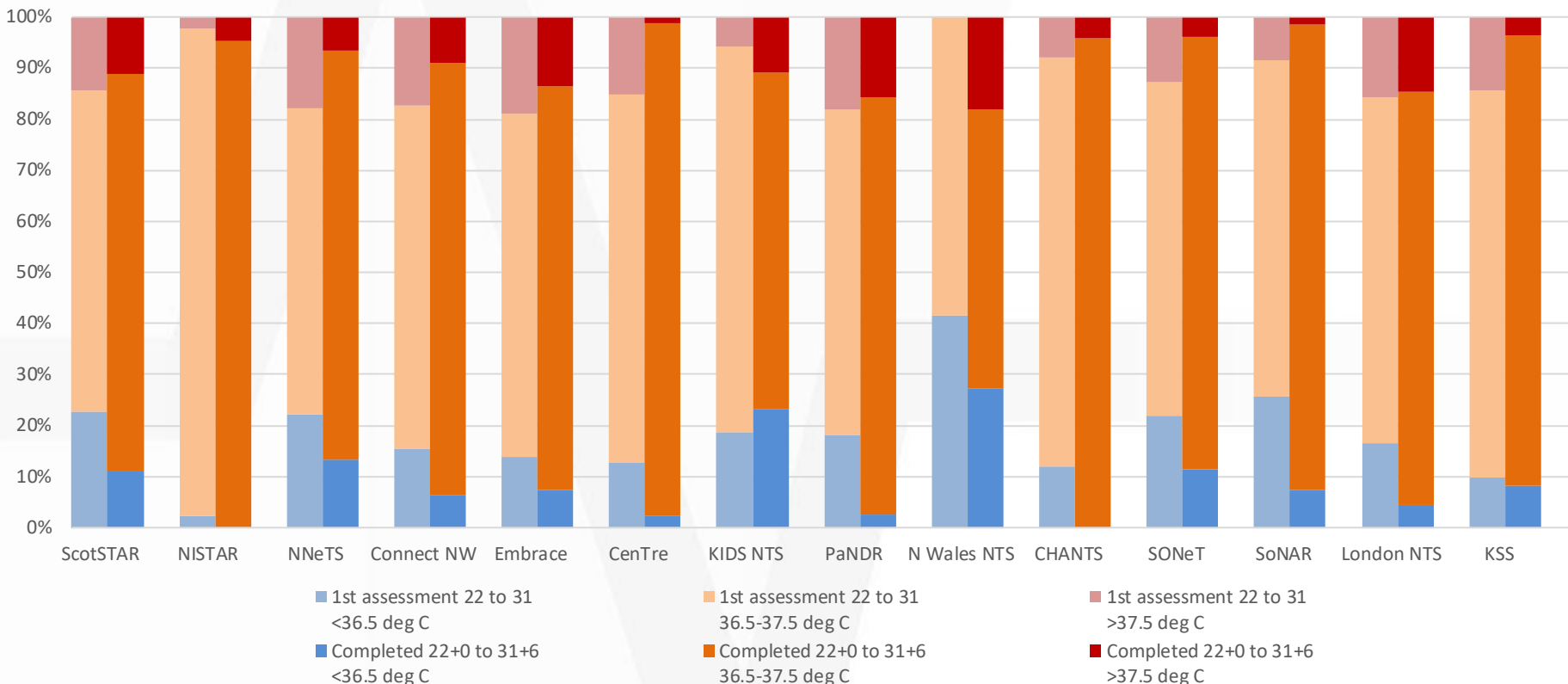


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## Temperatures on arrival and completion of transfer as 100% Apr 2023 to Mar 2024



# 1.3 Newborn Infants 22 to 26<sup>+6</sup> weeks

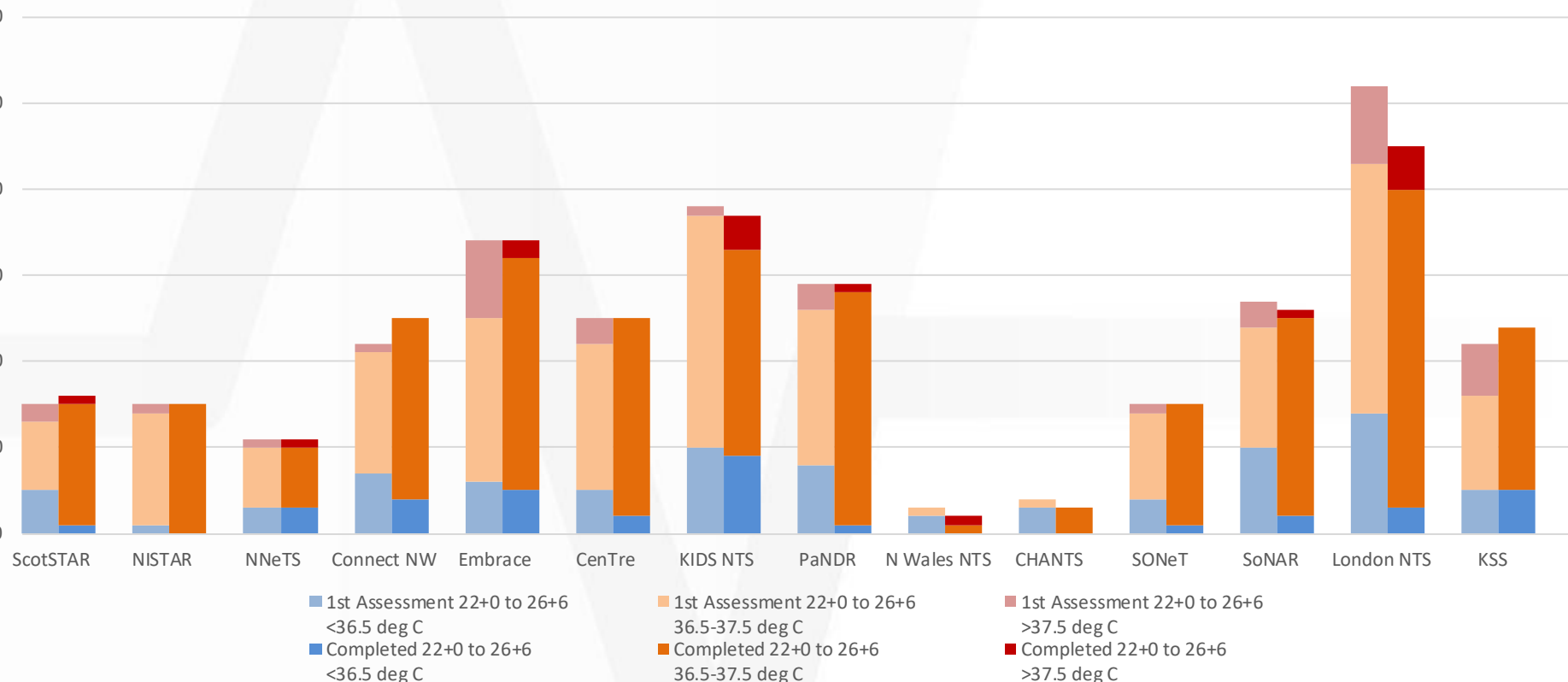


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## Temperatures on arrival and completion of transfer Apr 2023 to Mar 2024



# 1.3 Newborn Infants 22 to 26<sup>+6</sup> weeks

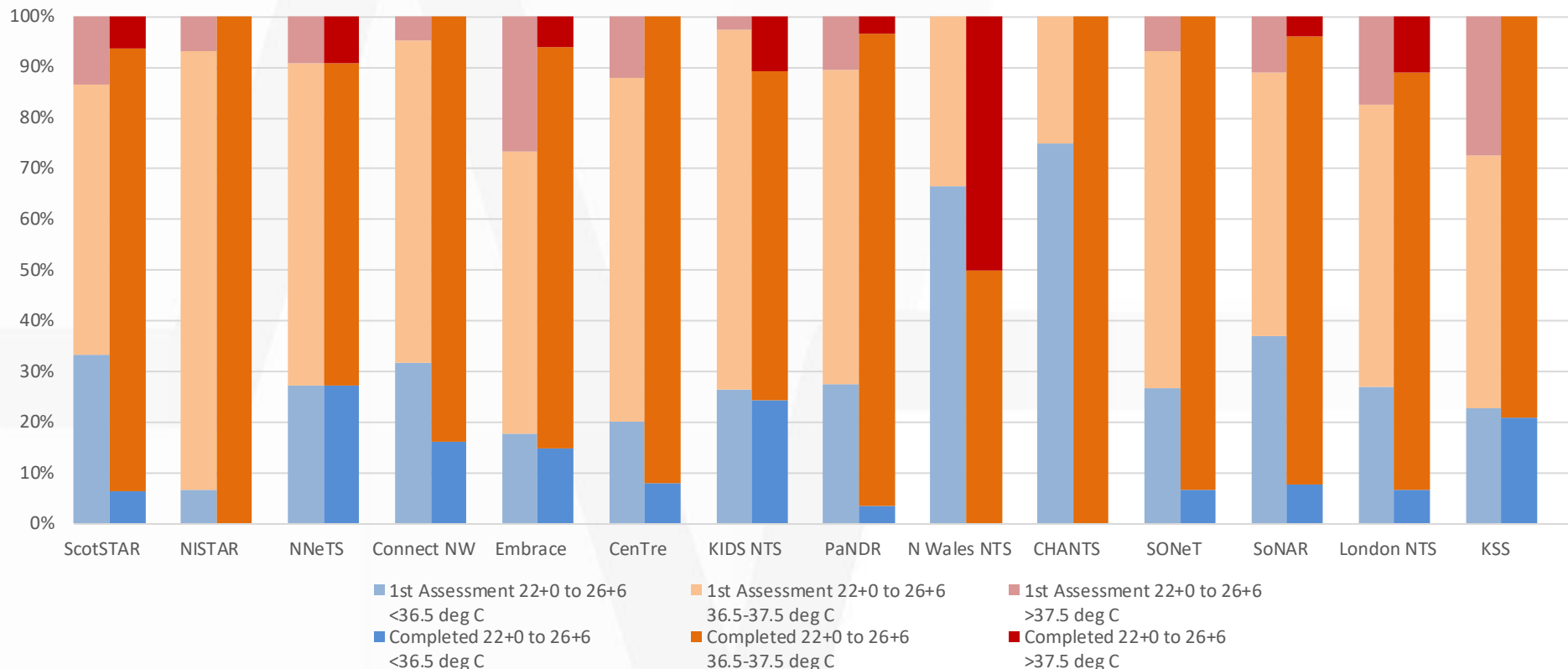


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## Temperatures on arrival and completion of transfer as 100% Apr 2023 to Mar 2024



# 1.3 Newborn Infants 27 to 32<sup>+6</sup> weeks

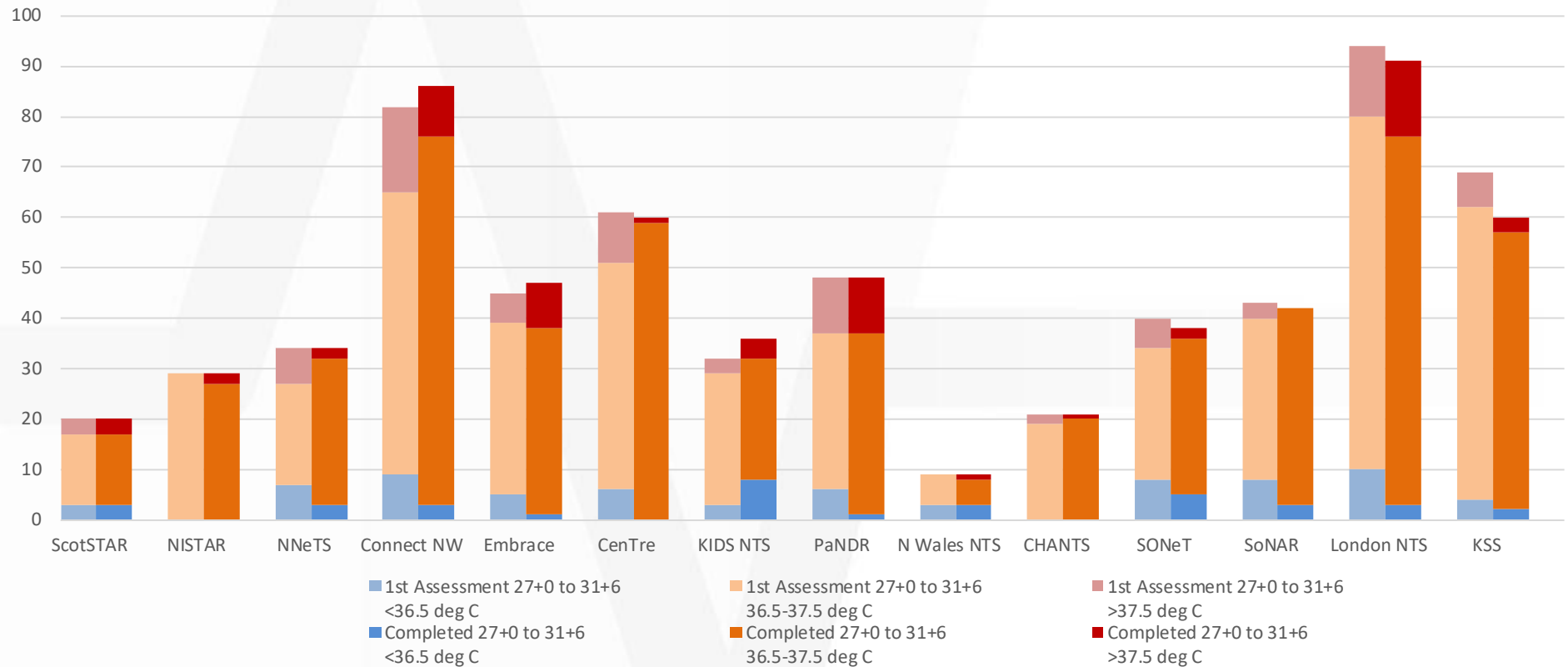


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## Temperatures on arrival and completion of transfer Apr 2023 to Mar 2024



# 1.3 Newborn Infants 27 to 32<sup>+6</sup> weeks

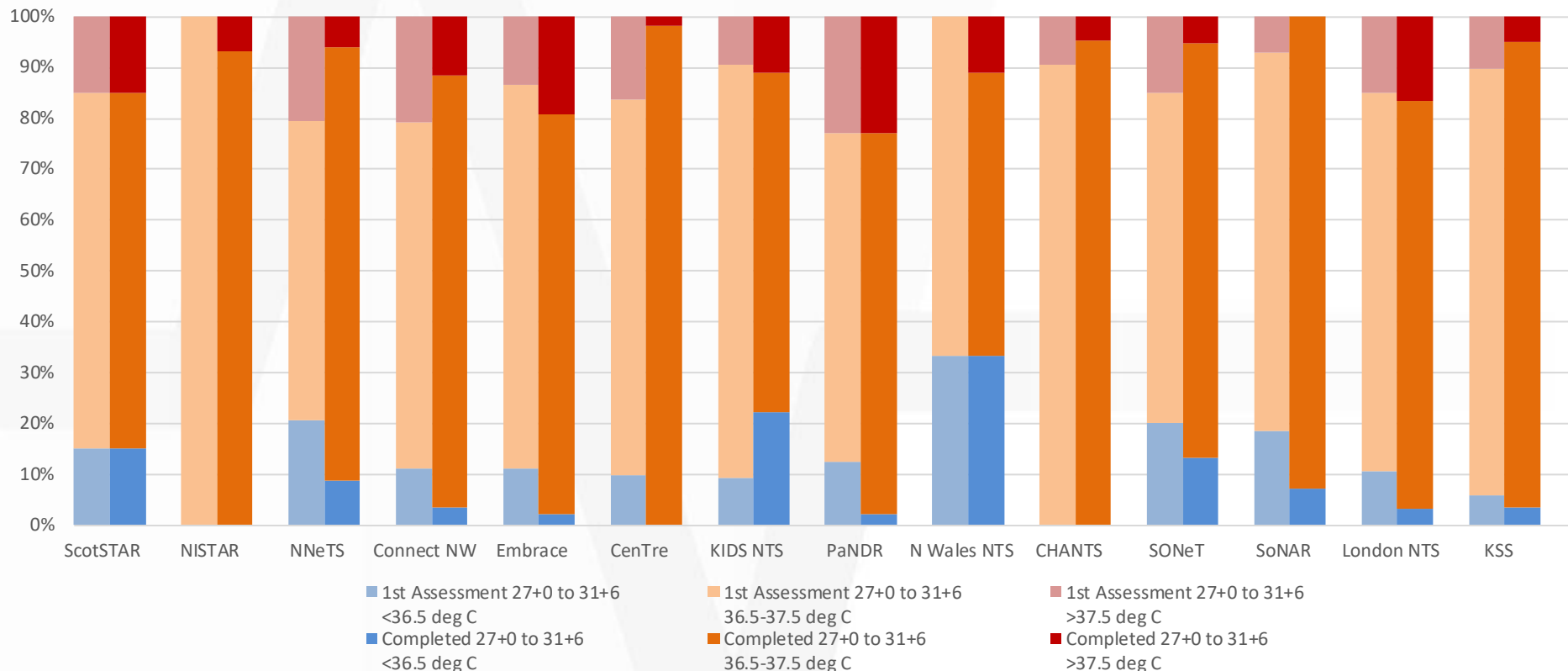


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## Temperatures on arrival and completion of transfer as 100% Apr 2023 to Mar 2024

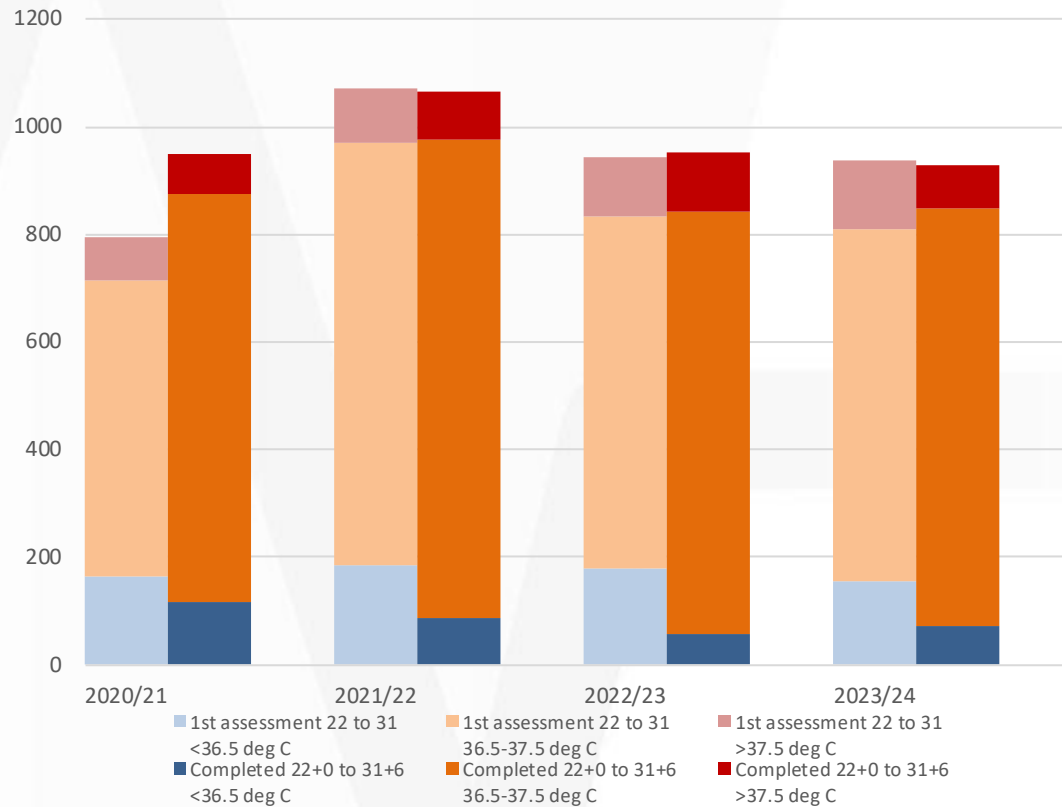


# 1.3 NTG Tallies



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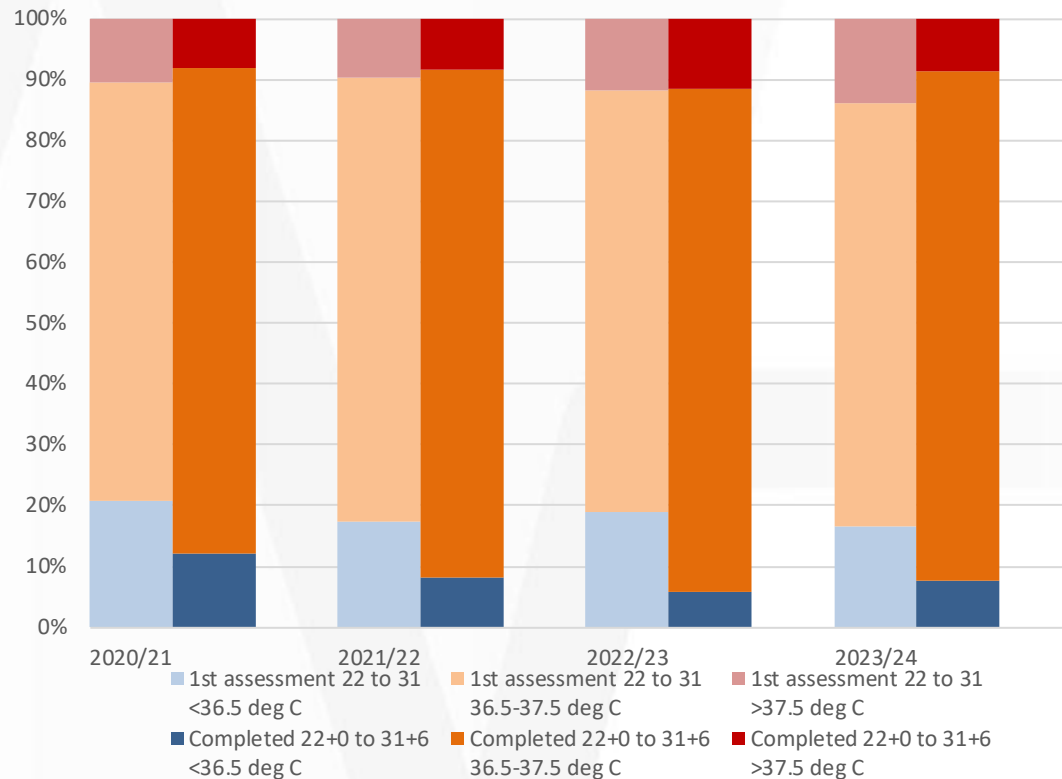


# National progress over time 20/21 to 23/24



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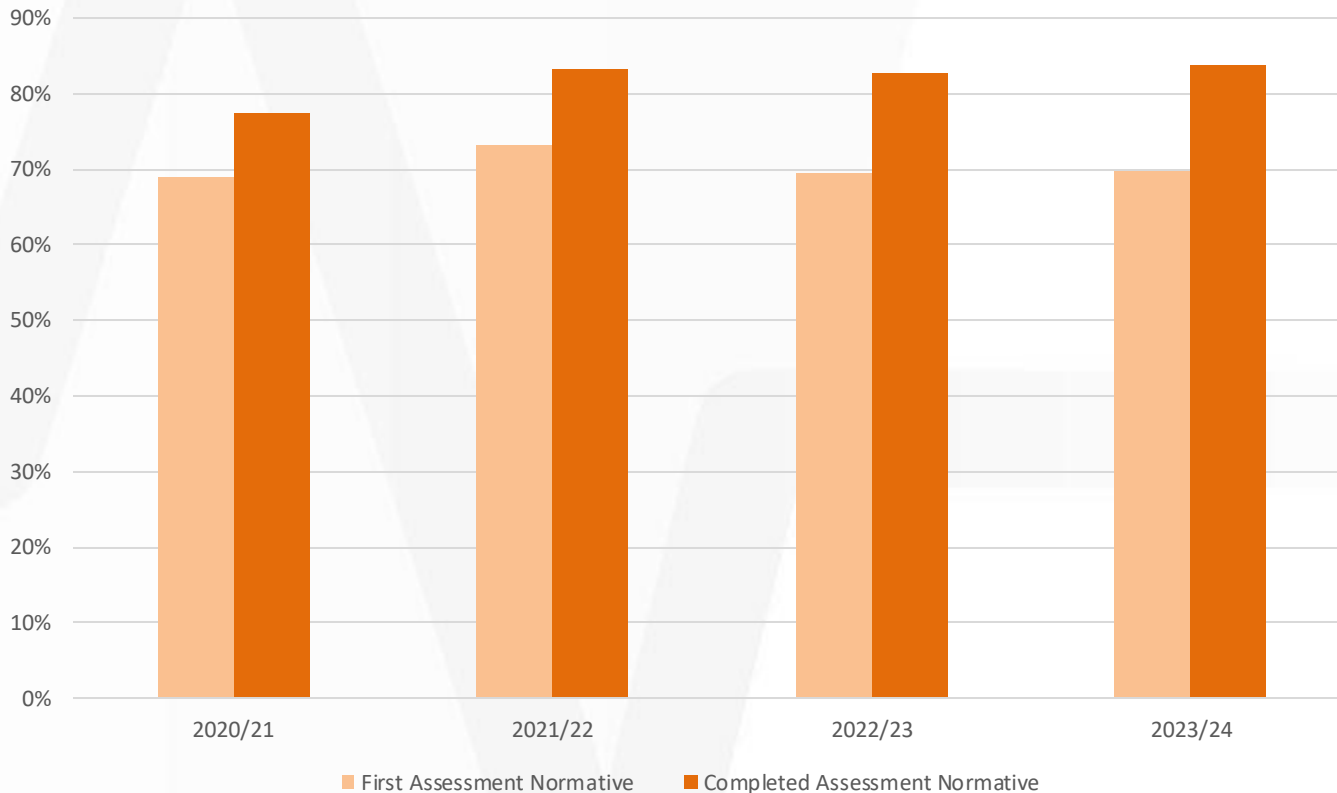


# Normothermia on first assessment and completion of transfer



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# Parent Travelling



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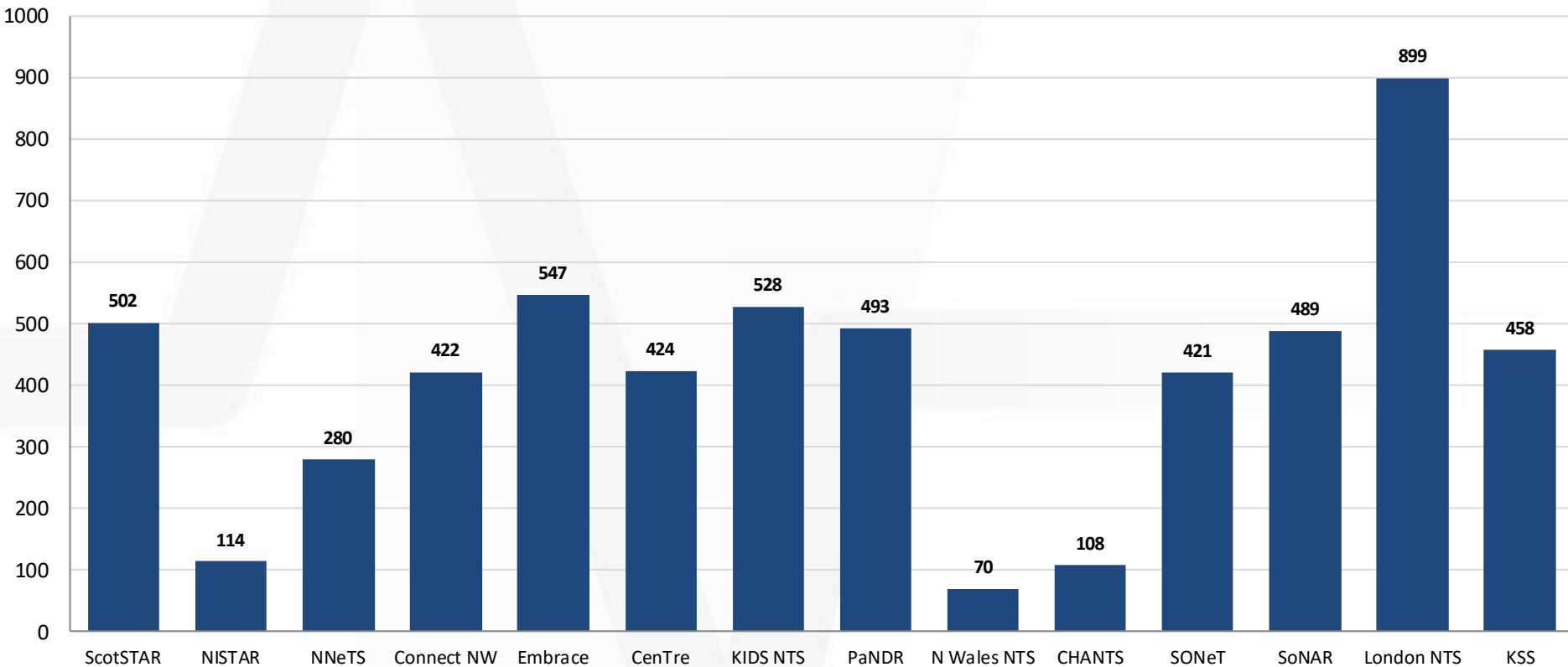


# Number of parents travelling with their baby by team Apr 2023 to Mar 2024



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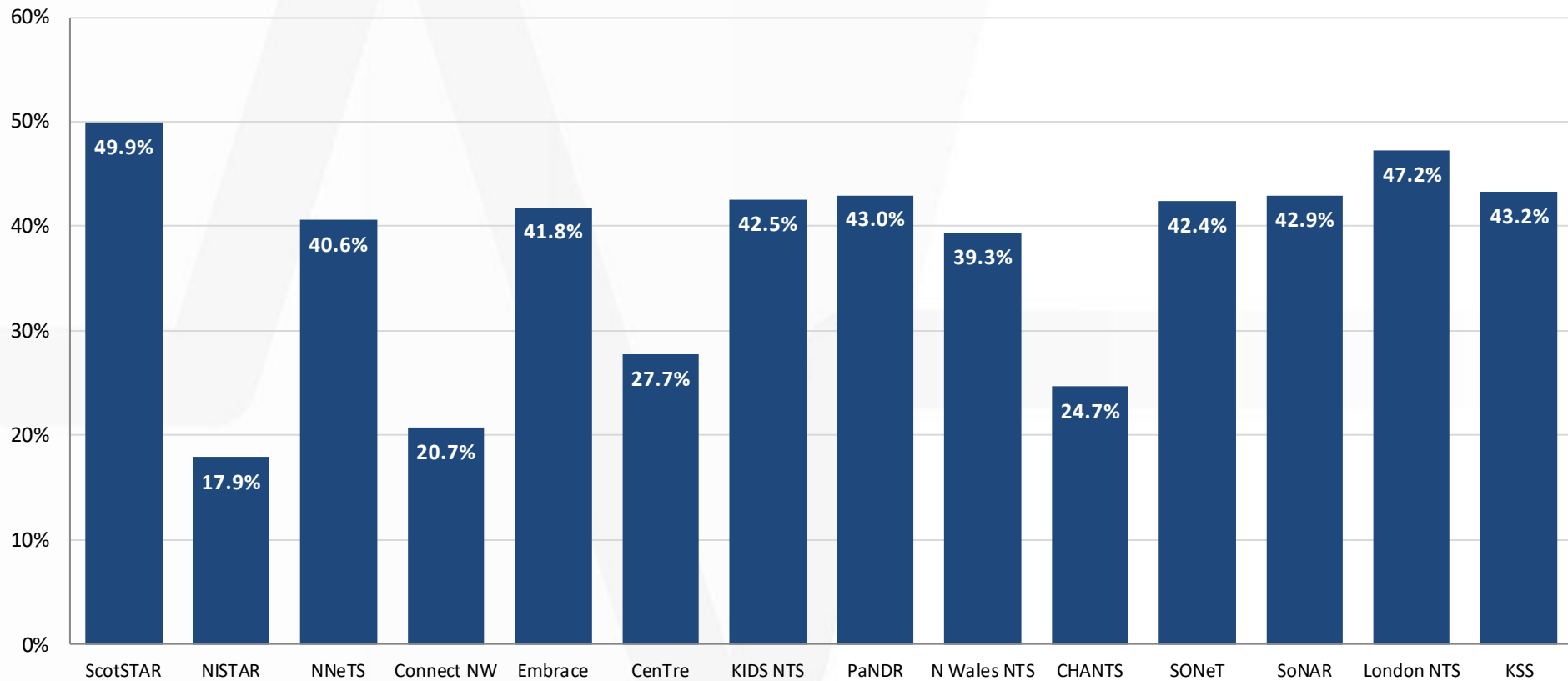


# Parents travelling with their baby by team, as a percentage of total transfers Apr 2023 to Mar 2024



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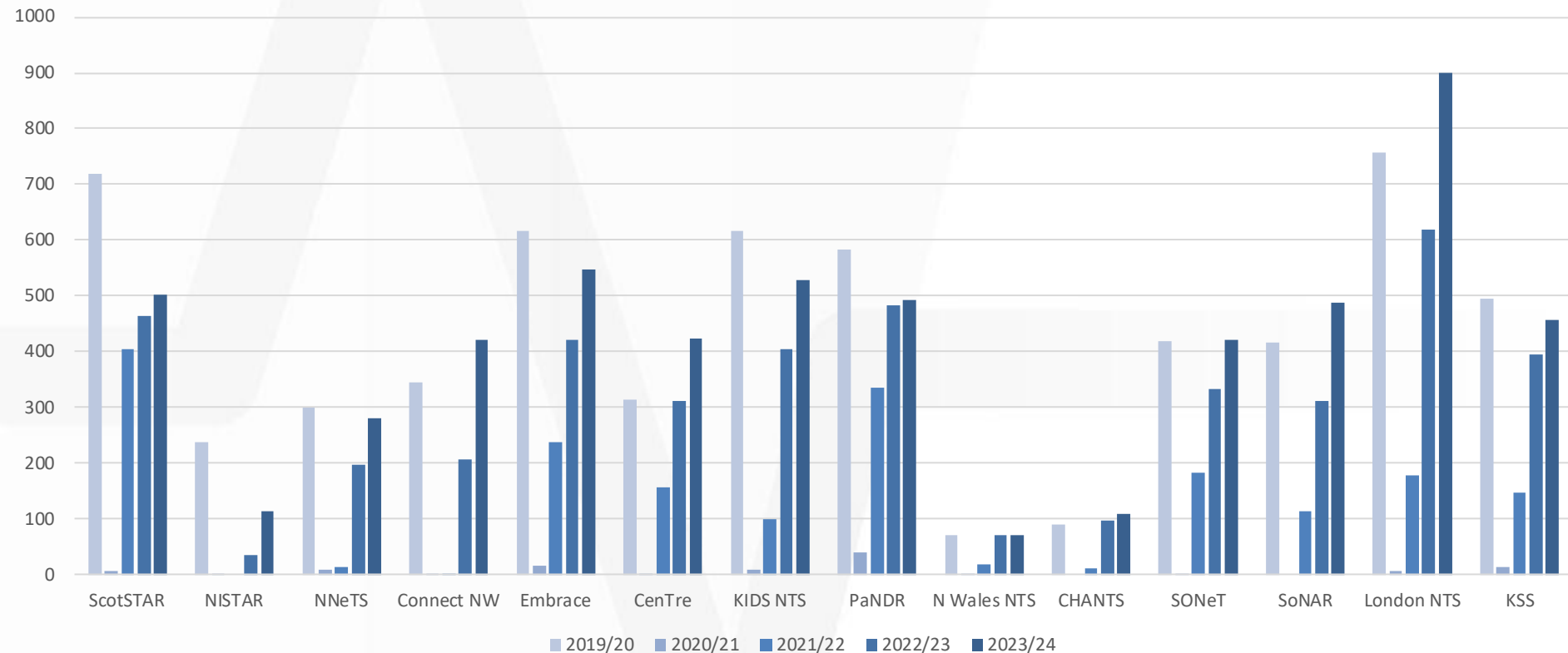


# Trends in numbers of parents travelling with their baby



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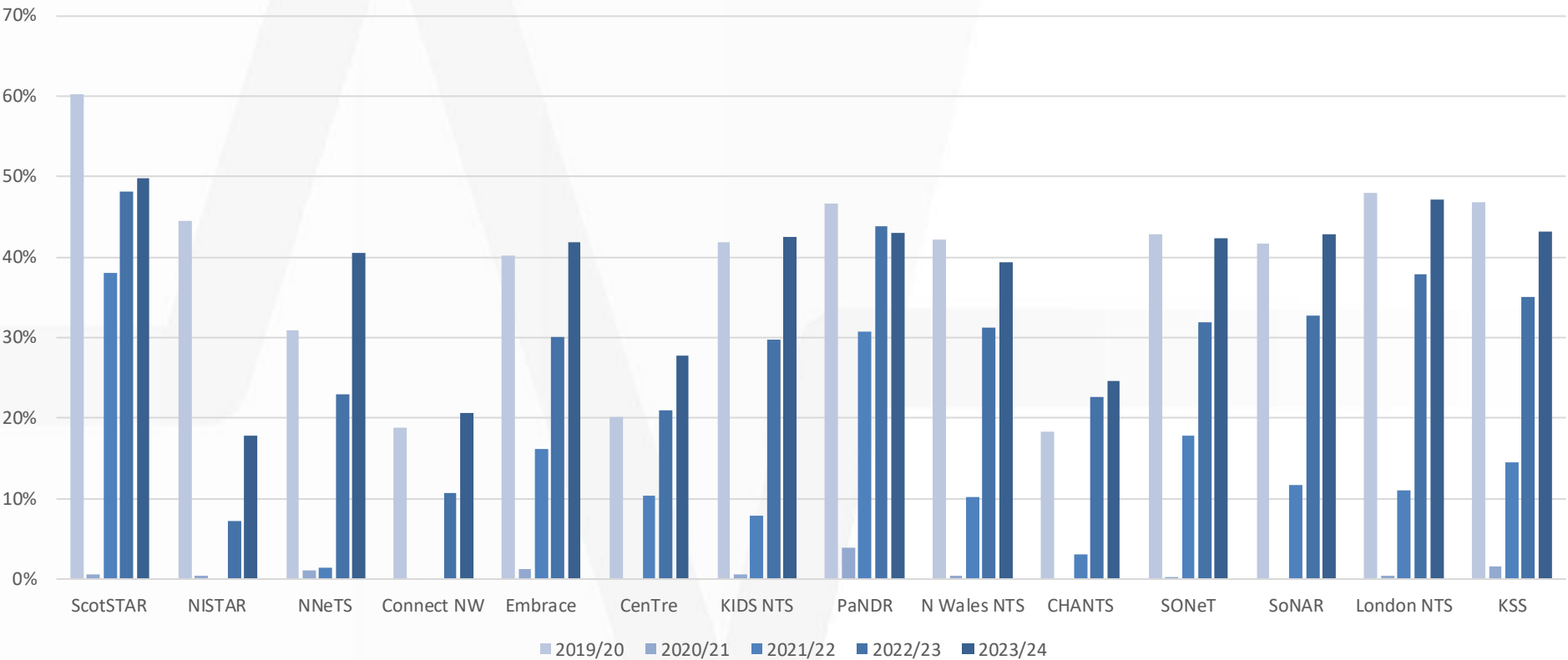


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# Trends in percentages of total transfers where parents travelled with their baby



# Workload:



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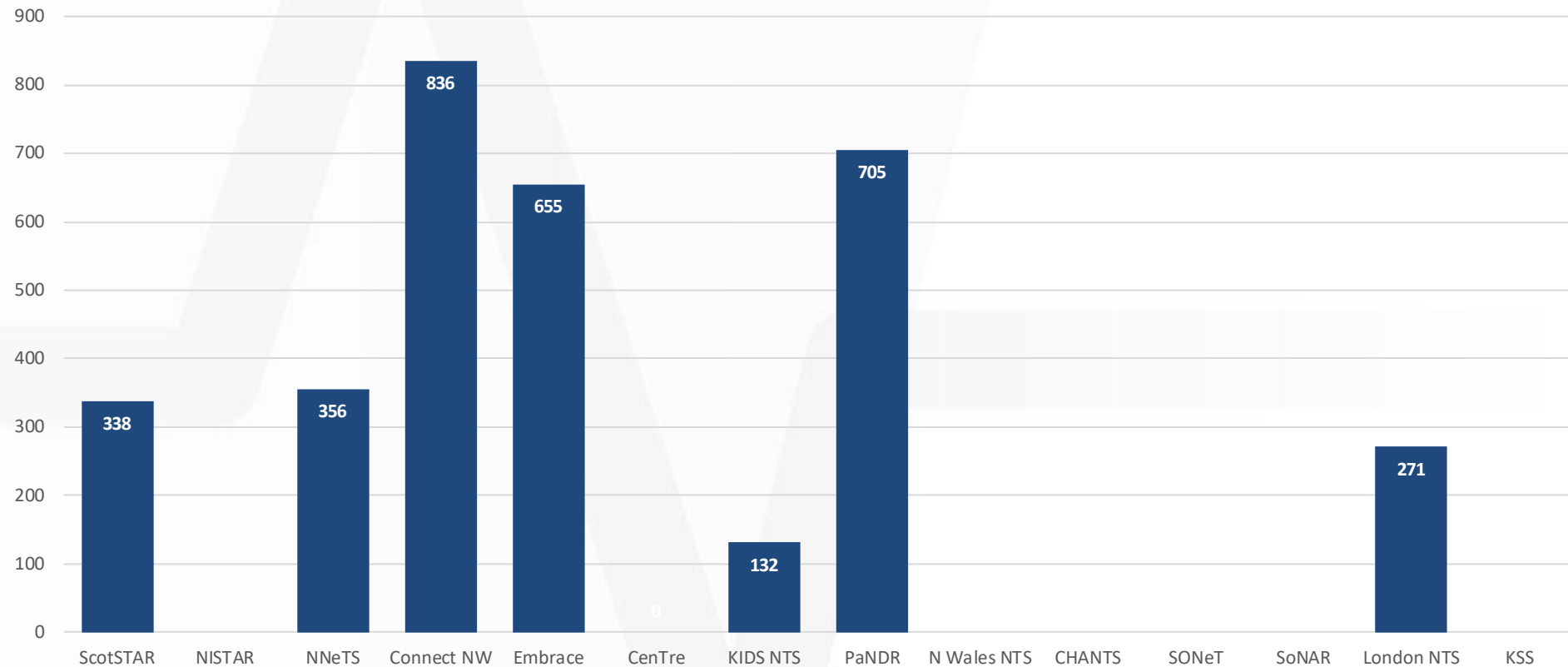
- In Utero transfer coordination
- Advice calls
- Bilious vomiting
- Prolonged transfers

# In Utero Transfer Coordination Workload 2022/23



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Number of IUTs coordinated by teams offering this service



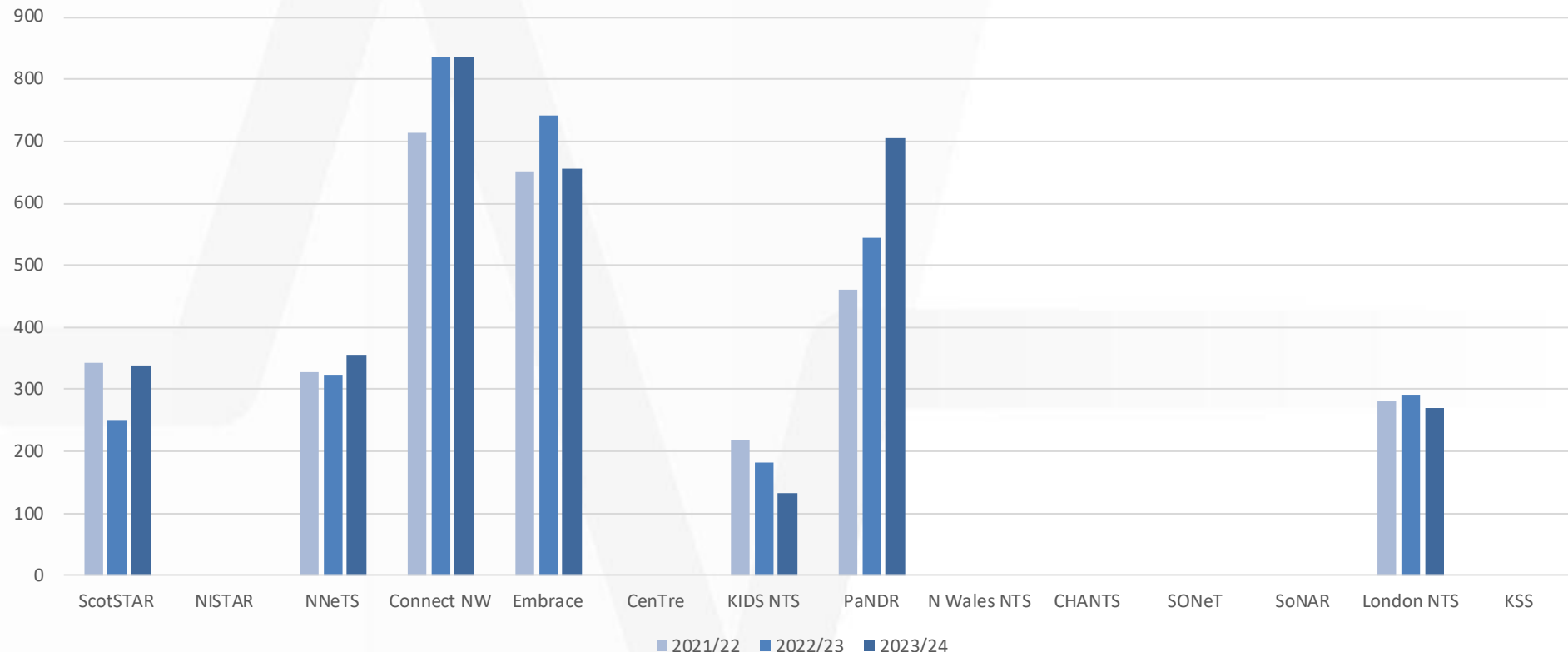


# In Utero Transfer Coordination numbers year to year comparison



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Number of IUTs coordinated by teams offering this service

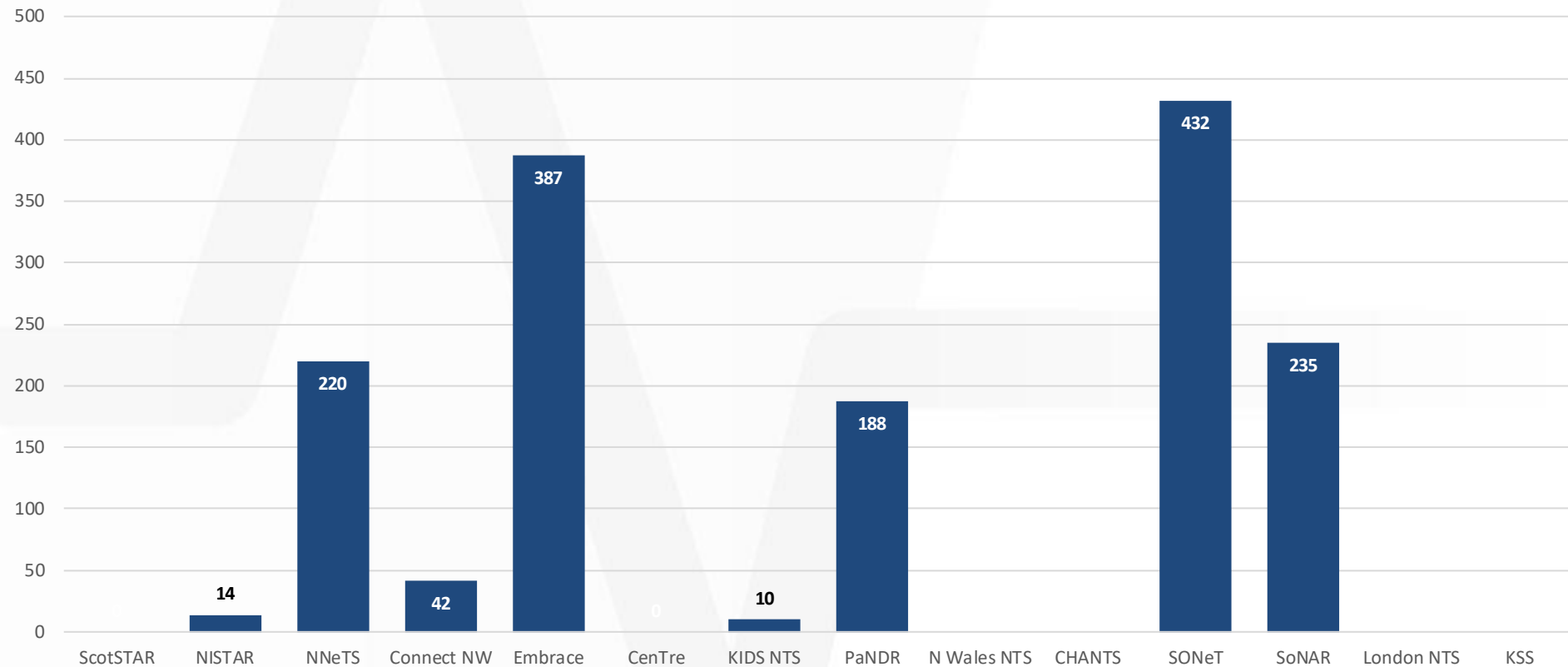


# Advice Calls Workload 2023/24



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Number of advice calls taken by teams commissioned to provide this service

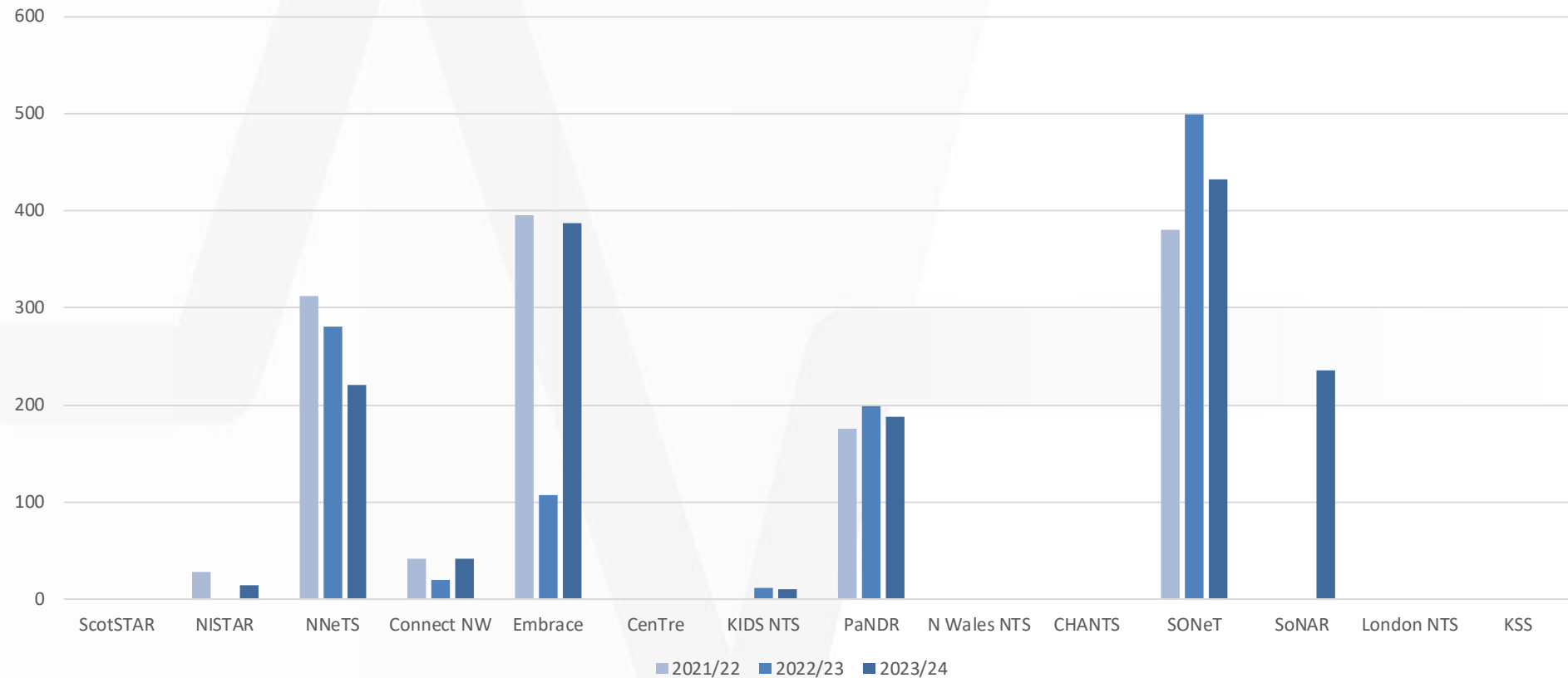


# Advice Calls Workload year on year comparison



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Number of advice calls taken by teams commissioned to provide this service

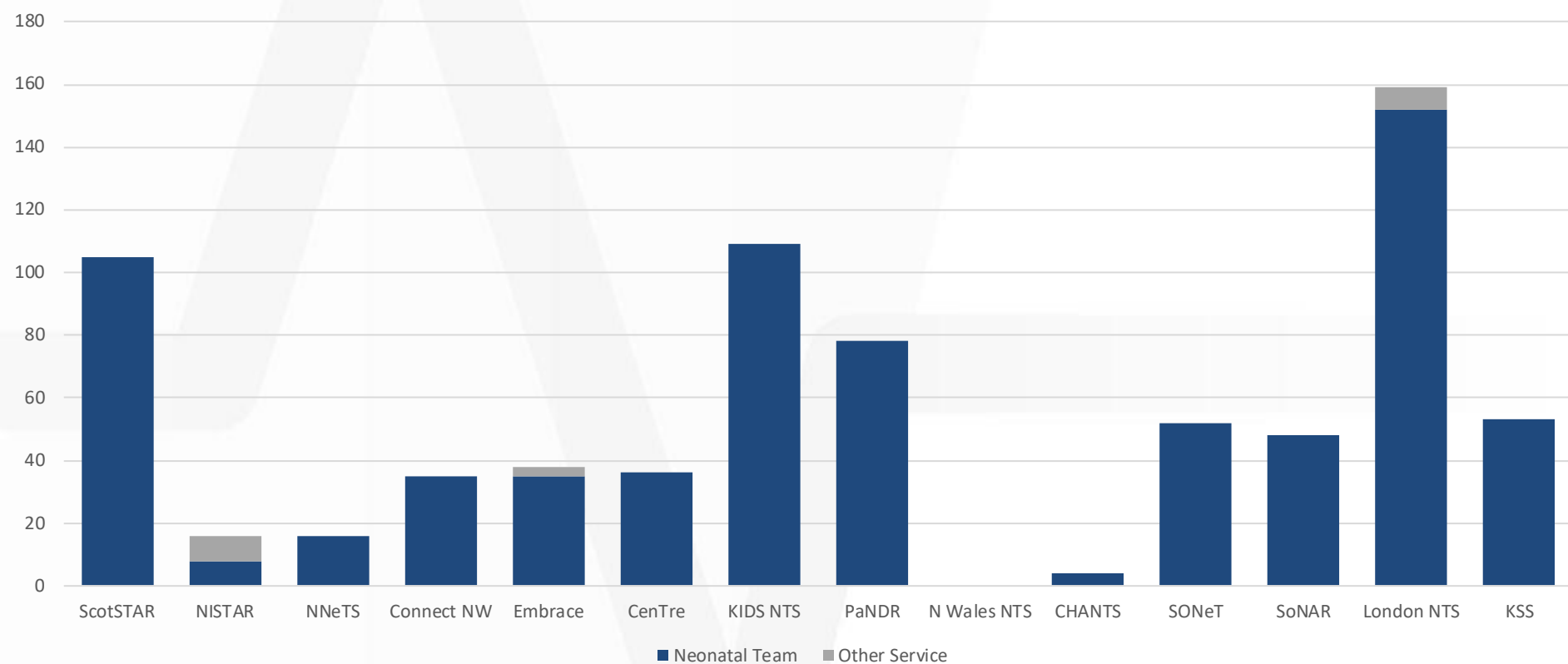


# Number of babies transferred for Bilious Vomiting by service 2023/24



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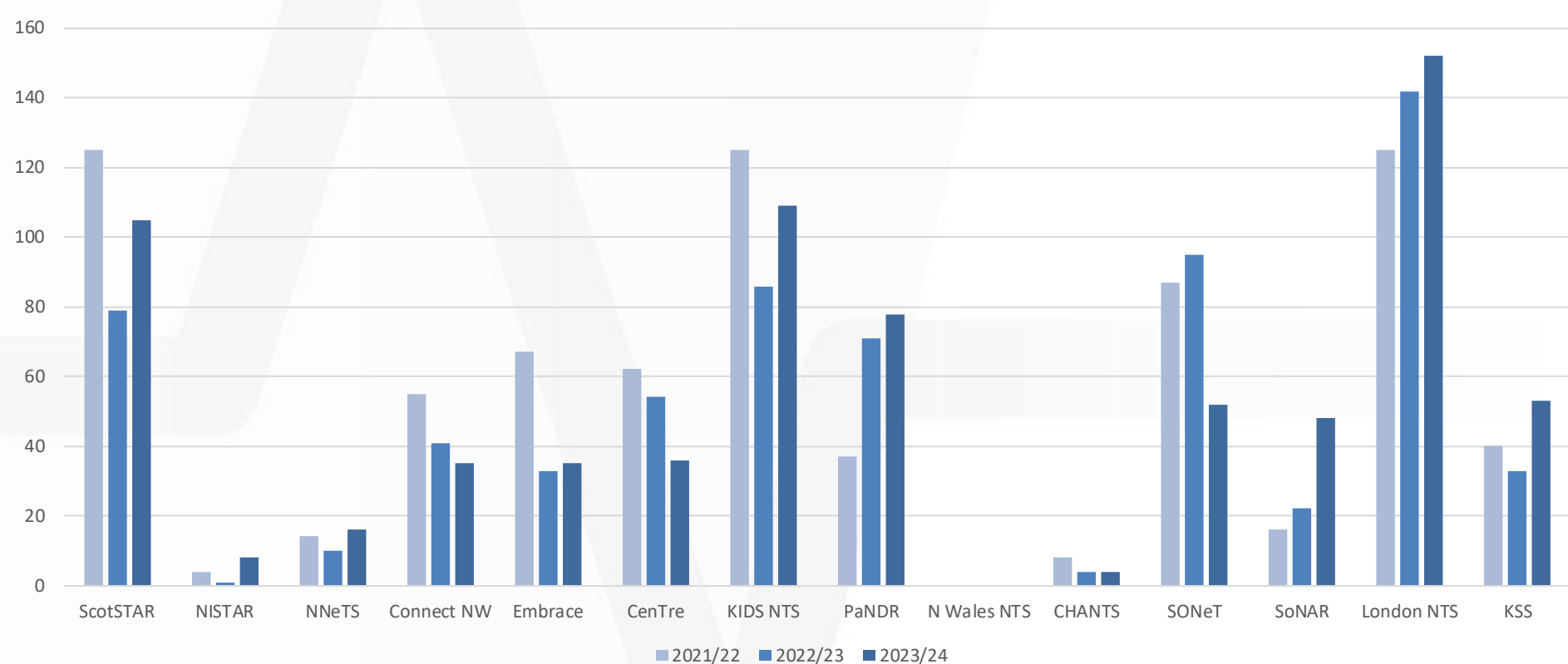


# Numbers of babies transferred for Bilious Vomiting year to year comparison



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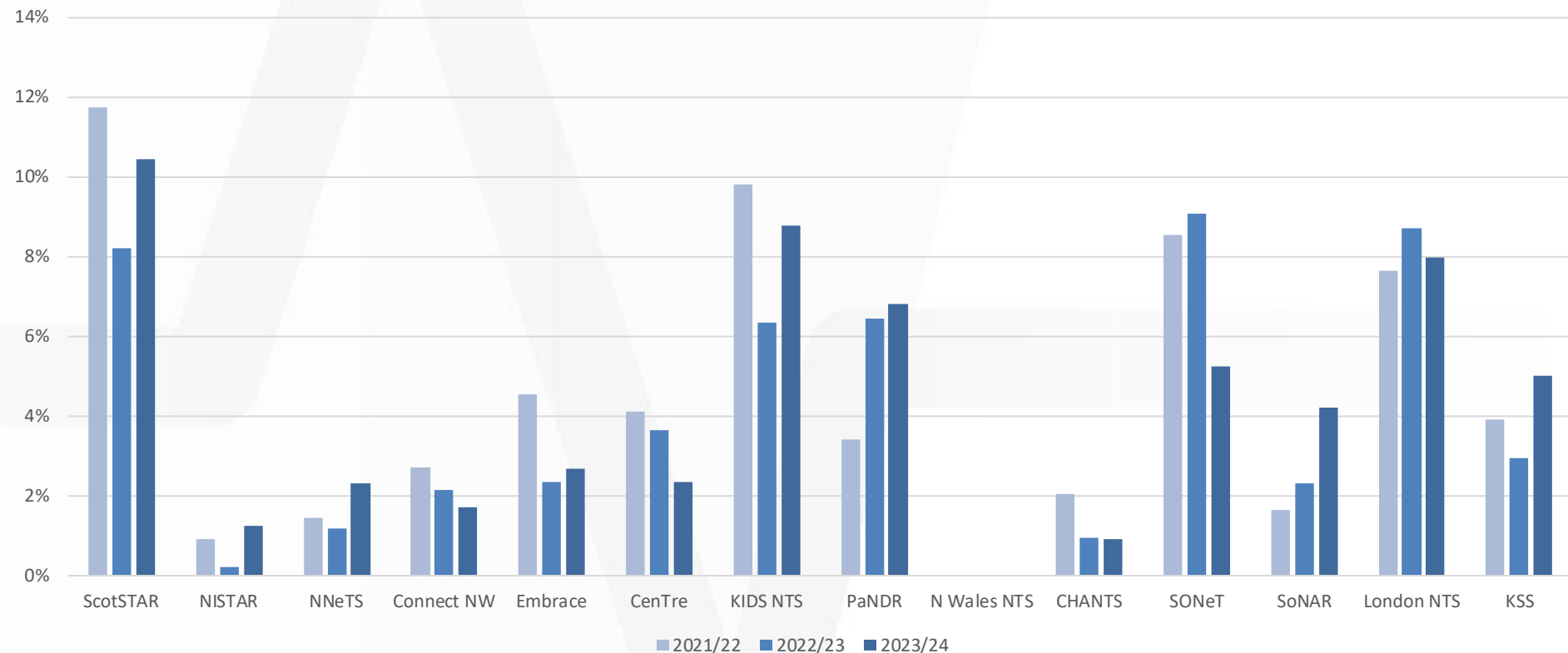


# Numbers of babies transferred for Bilious Vomiting year to year comparison



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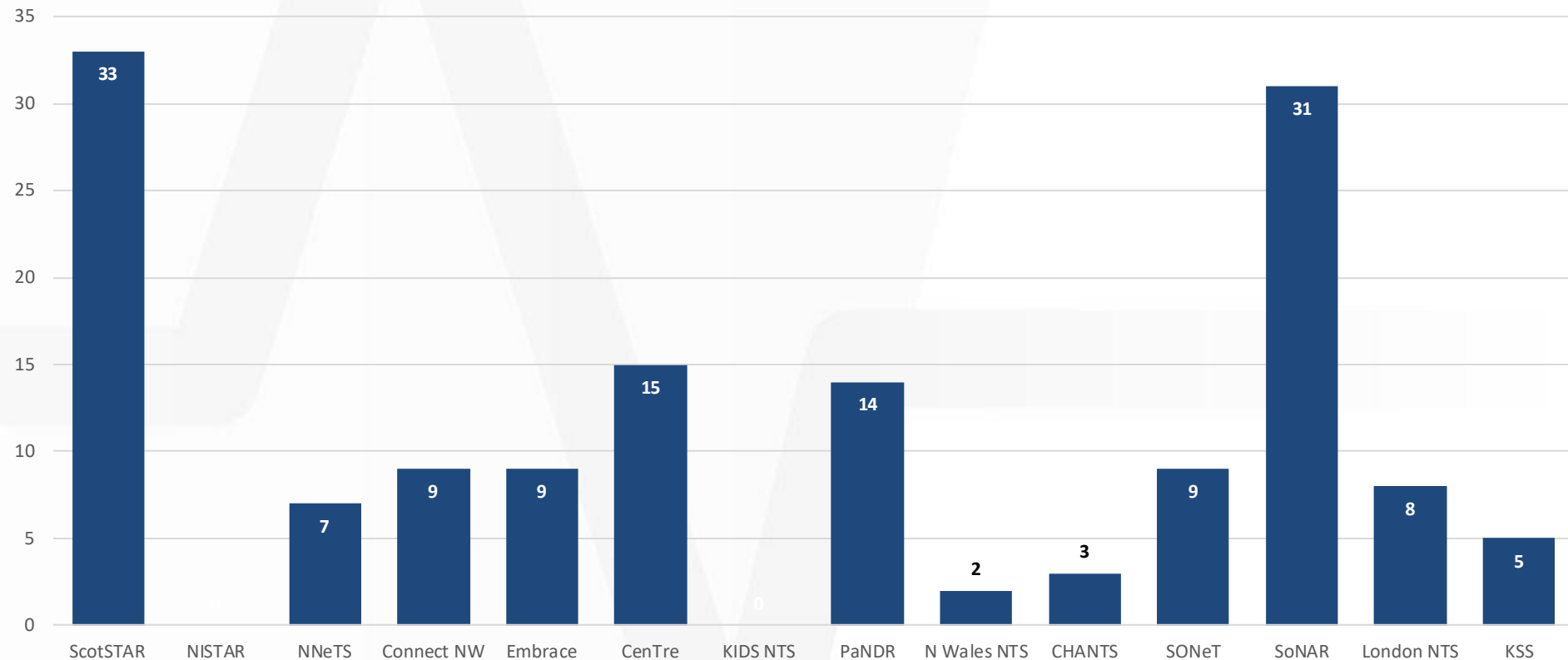


# Prolonged Transfers- baby in transit for 3 hours or more 2023/24



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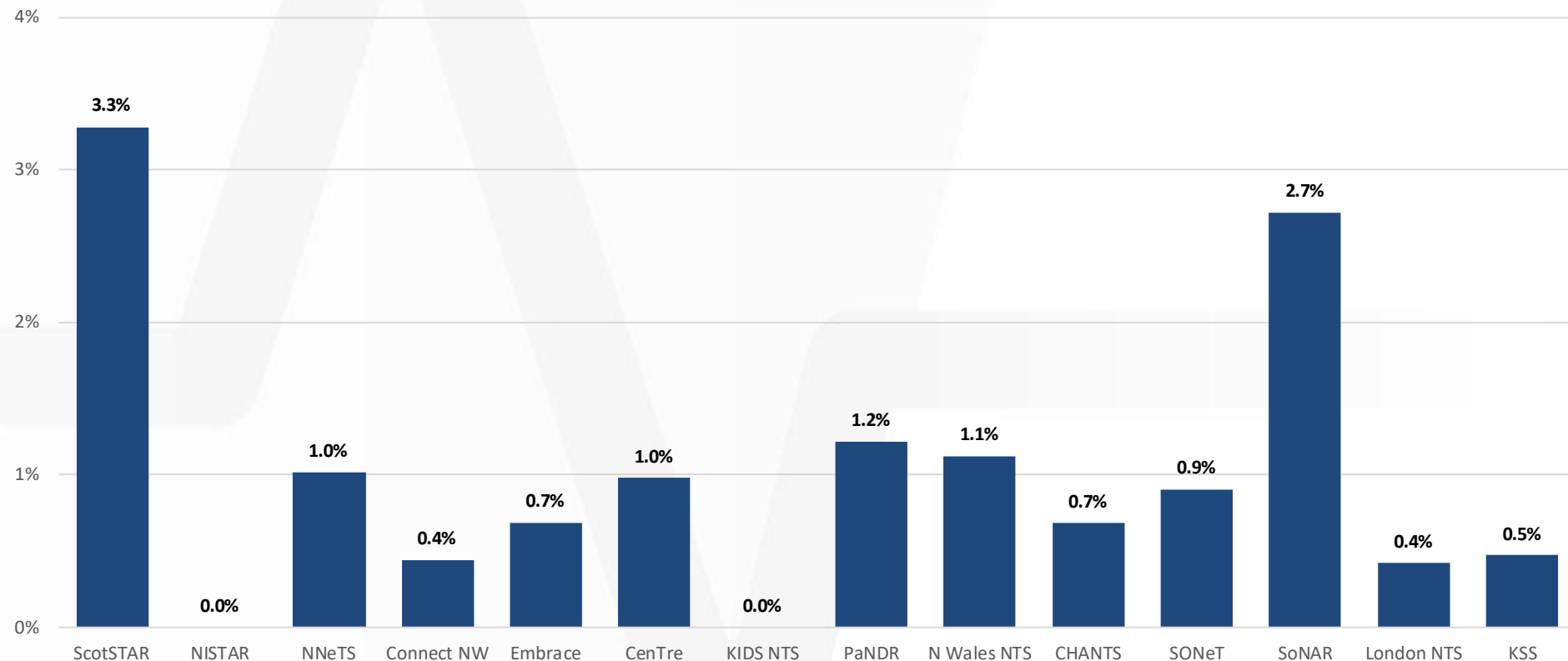


# Prolonged Transfers (3 hours or more) as a percentage of total transfers 2023/24



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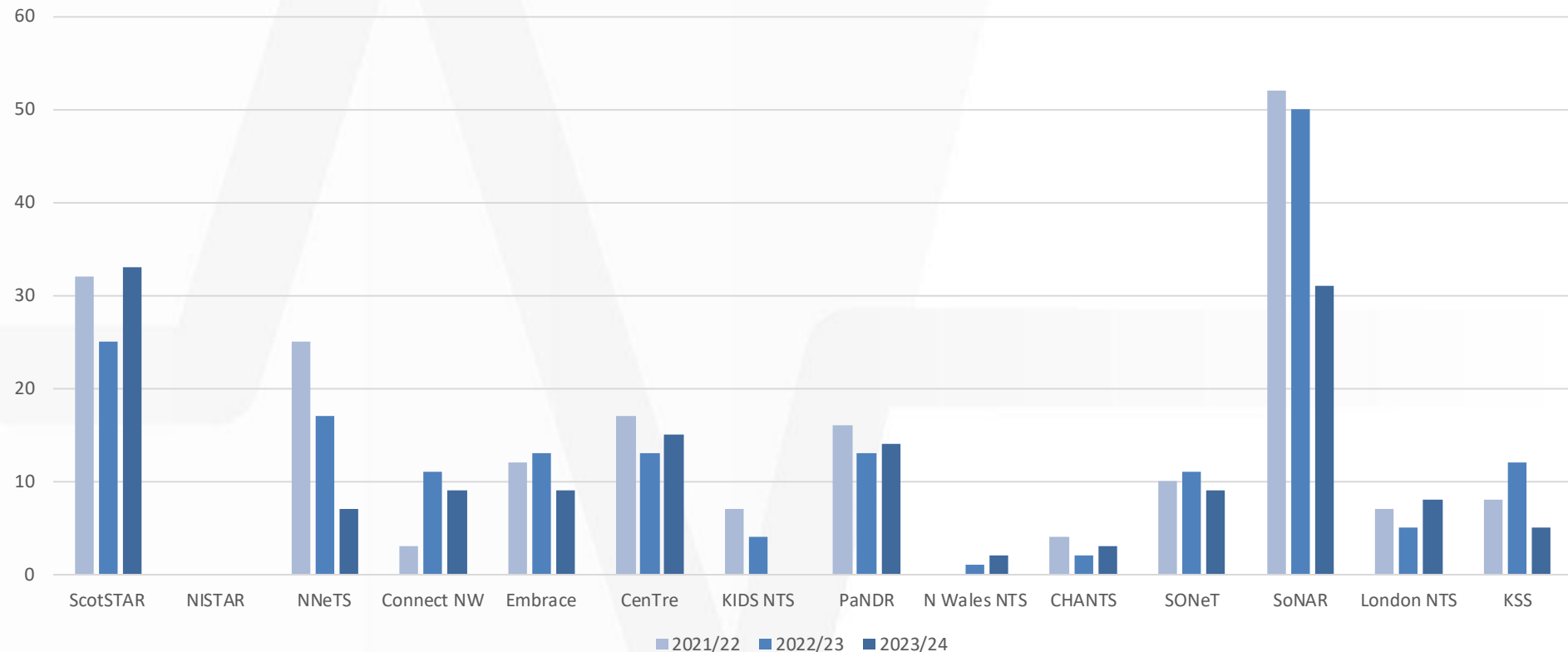


# Prolonged Transfers- baby in transit for 3 hours or more year on year comparison



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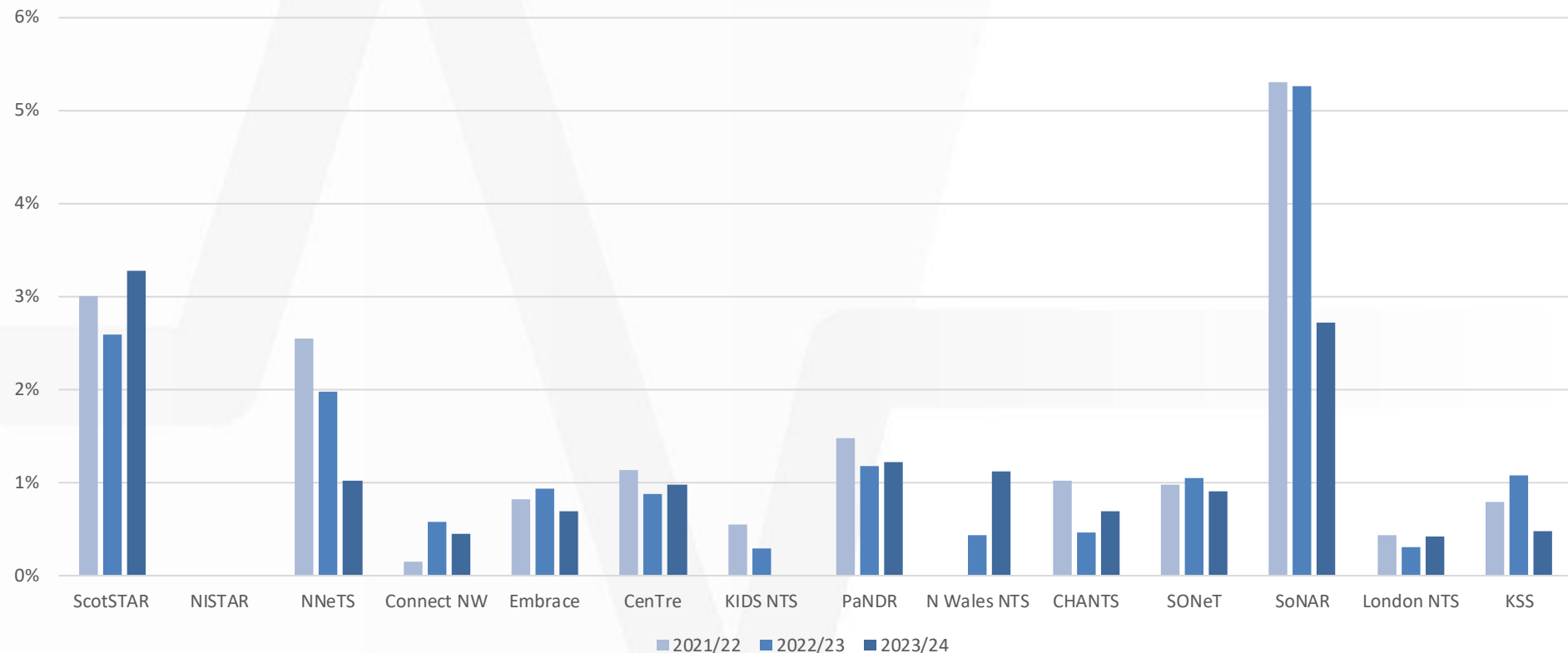


# Trends in prolonged Transfers- baby in transit for 3 hours or more as a percentage of total transfers



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# Benchmarking



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## Data on

- Immediate dispatch (percentage mobile in under 60 mins)
- Referral response time for ICU uplift transfers
- Uplift transfers performed within catchement area

# Immediate dispatch criteria



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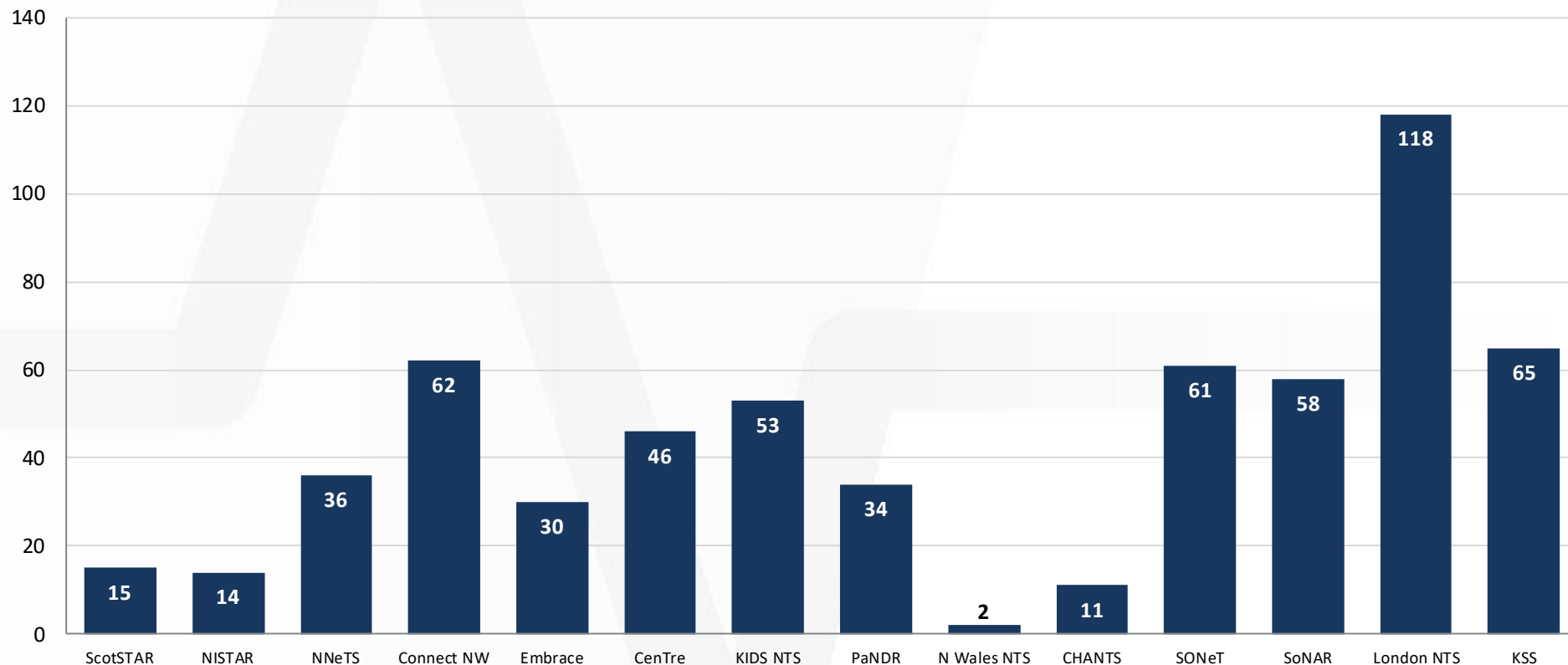
- Gastroschisis
- Ventilated infant with Tracheo-oesophageal fistula +/- atresia
- Intestinal perforation
- Suspected duct-dependent cardiac lesion not responding to prostin
- Unstable respiratory or cardiovascular failure not responding to appropriate management:
  - *Despite giving appropriate ventilation via endotracheal tube the infant's respiratory status remains unstable or severely compromised:*

# Immediate dispatch transfers by team Apr 2023 to Mar 2024



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N.b. this is benchmarking data on response for a defined group of transfers, this does not represent overall "emergency workload"

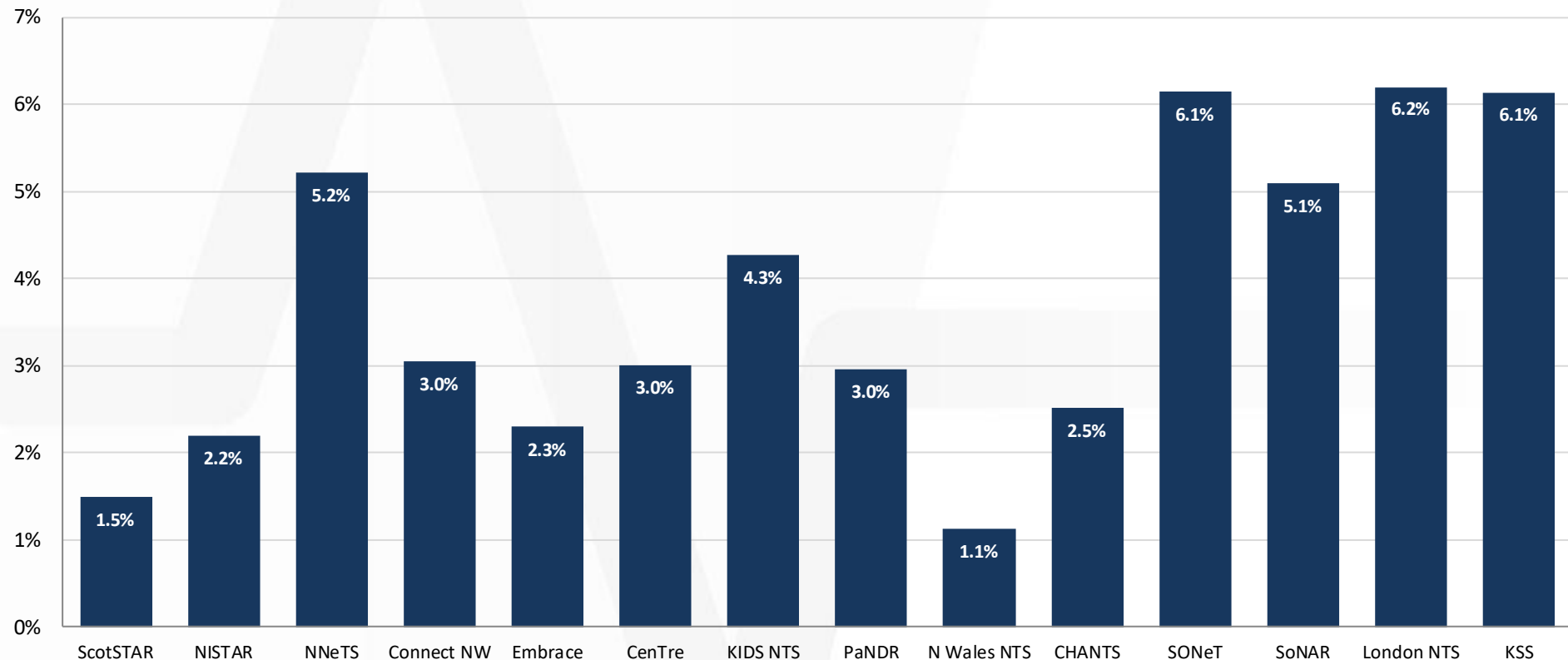


# Immediate dispatch transfers by team as a percentage of total transfer 2023/24



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N.b. this is benchmarking data on response for a defined group of transfers, this does not represent overall "emergency workload"

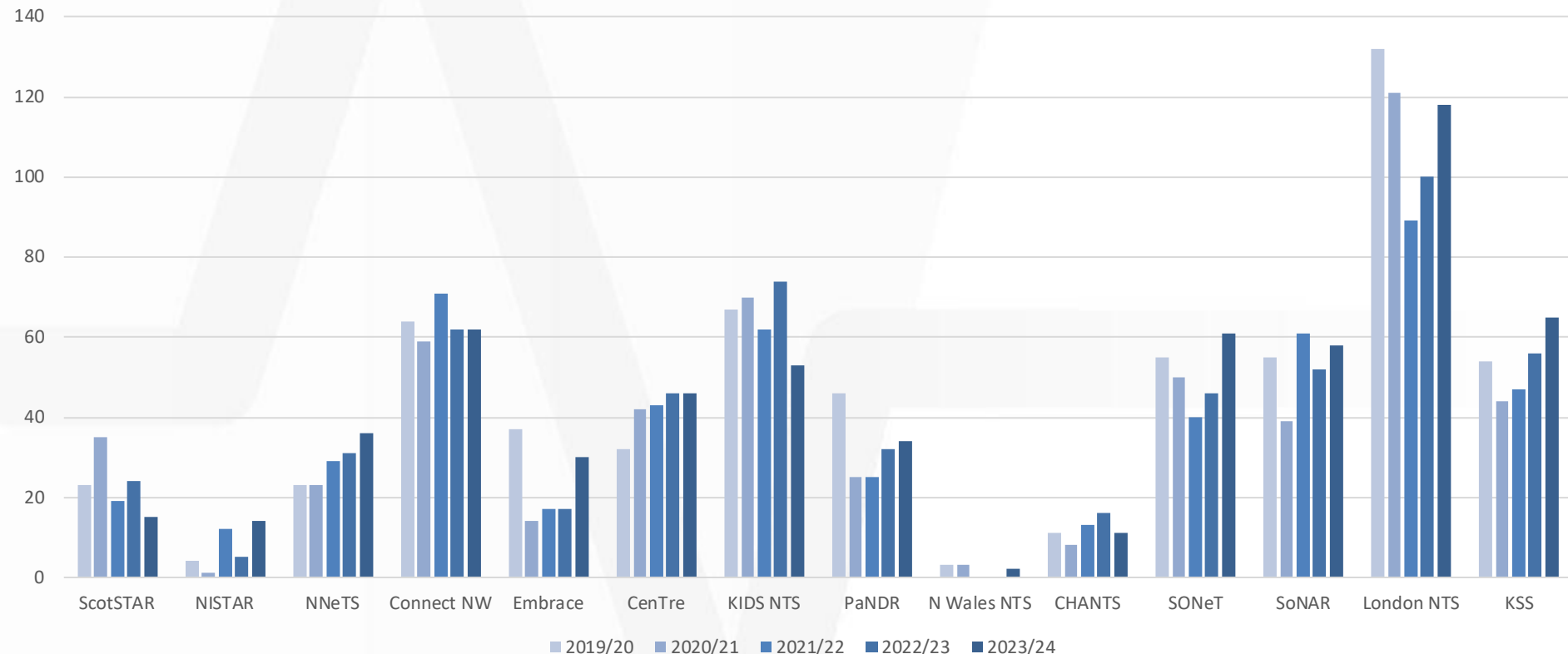


# Trends in numbers of immediate dispatch transfers by team, 2019/20 to 2023/24



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N.b. this is benchmarking data on response for a defined group of transfers, this does not represent overall "emergency workload"

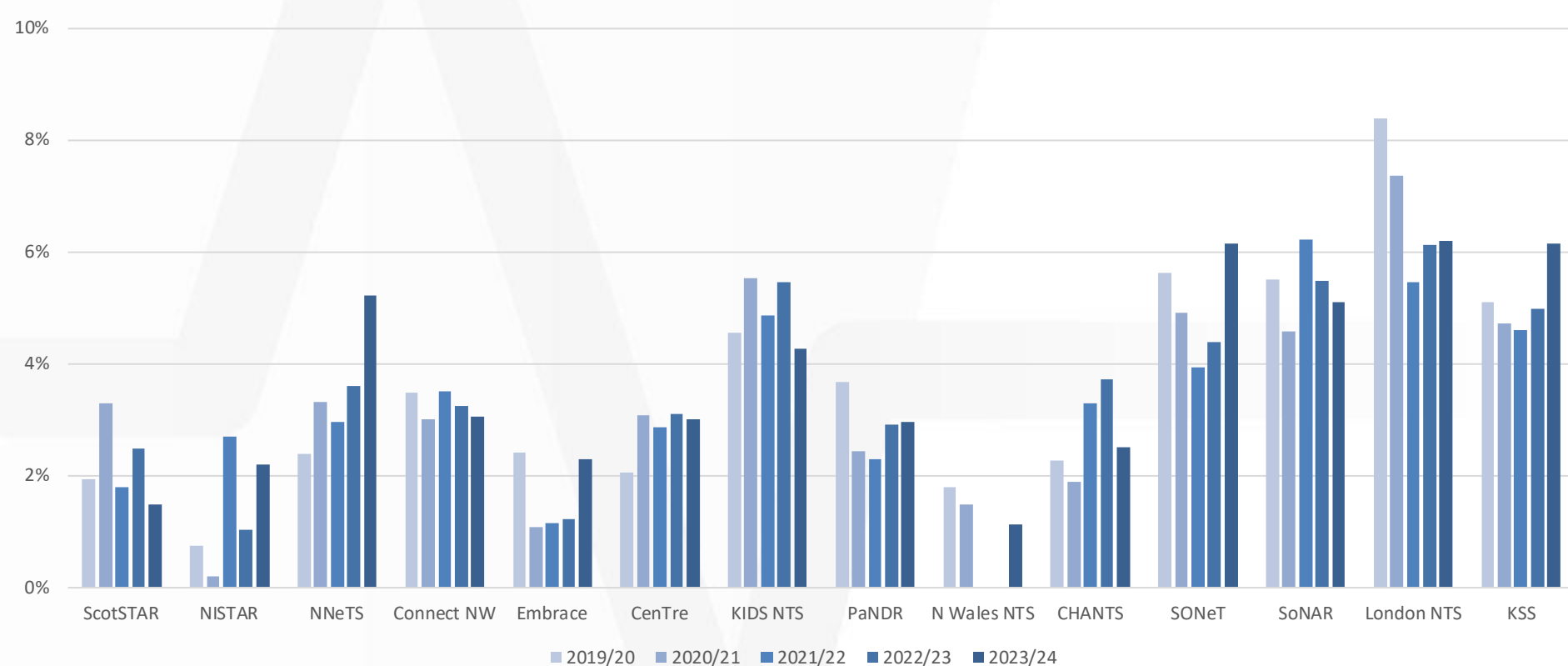


# Trends in immediate dispatch transfers as a percentage of total transfers, by team, 2019/20 to 2023/24



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N.b. this is benchmarking data on response for a defined group of transfers, this does not represent overall "emergency workload"



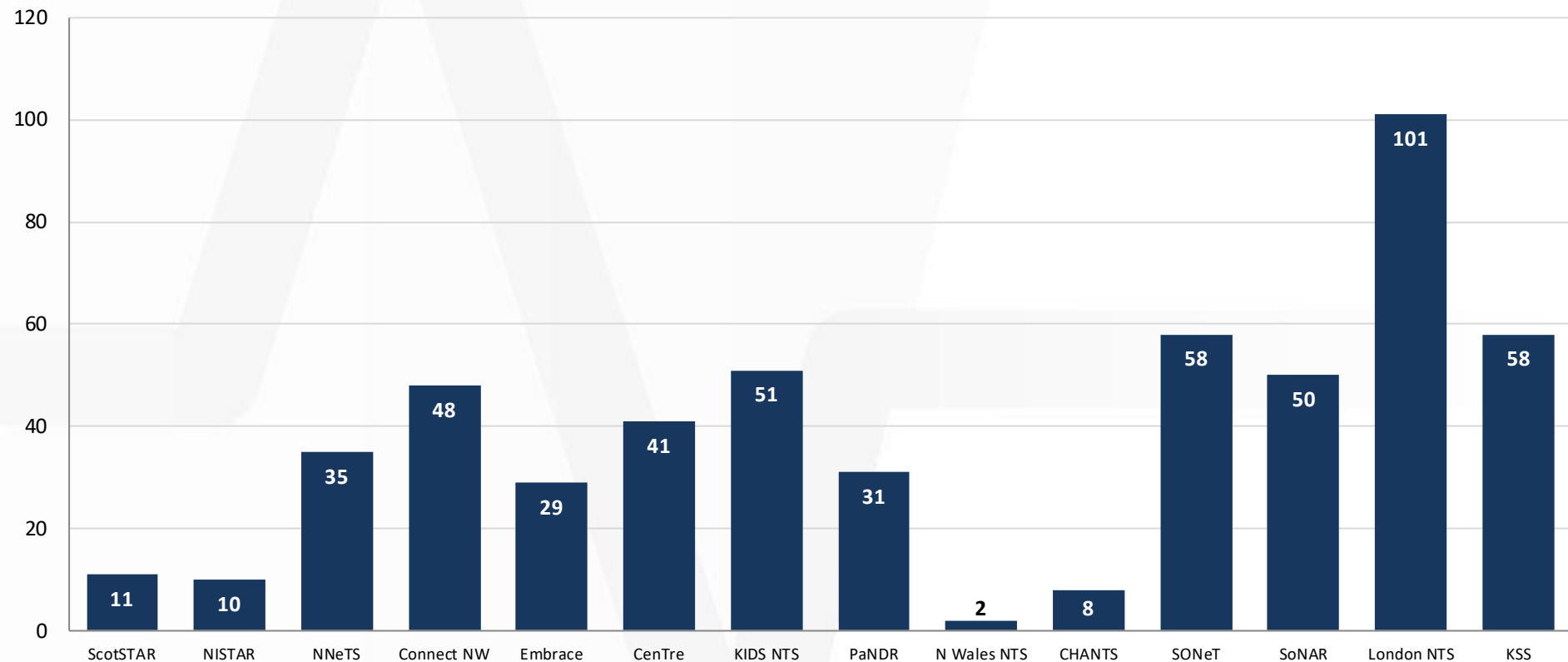


# Immediate dispatch transfers dispatched within 60 minutes by team Apr 2023 to Mar 2024



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N.b. this is benchmarking data on response for a defined group of transfers, this does not represent overall "emergency workload"

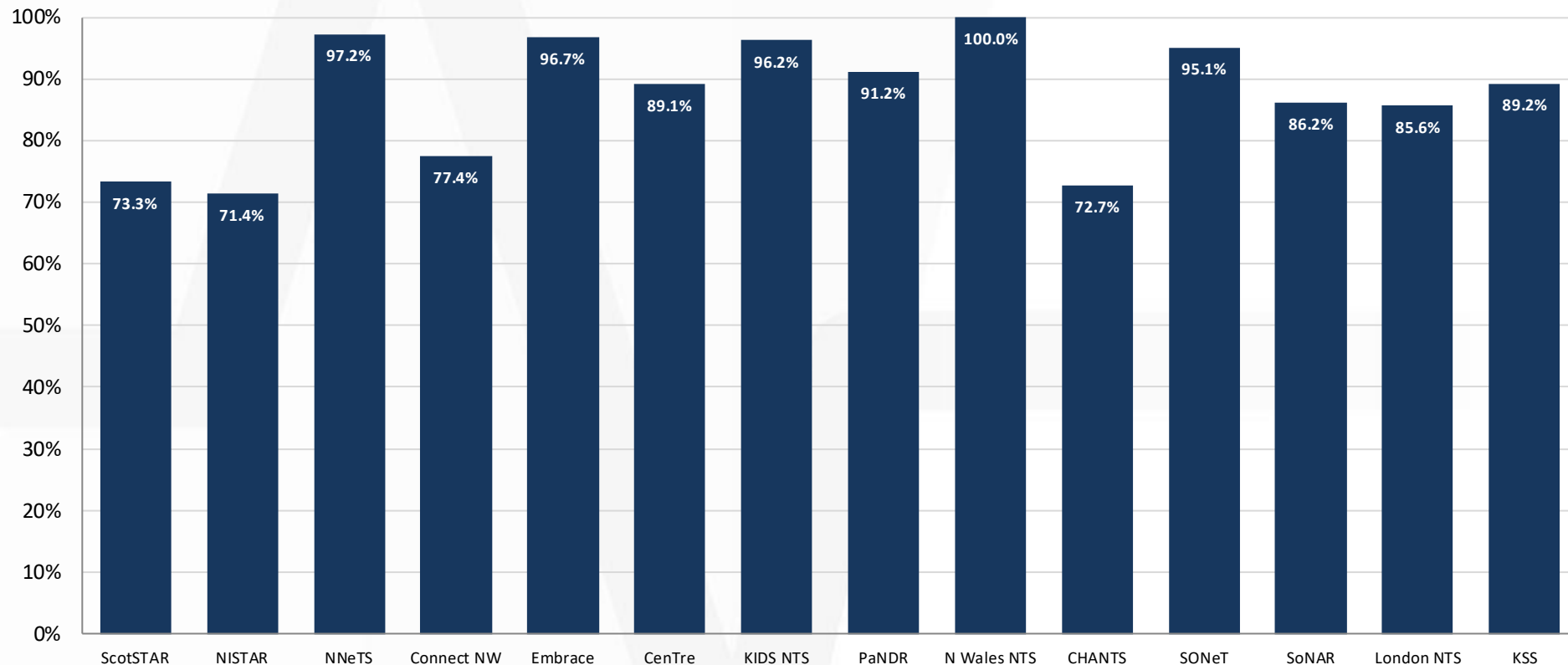


# Percentage of Immediate Dispatch transfers dispatched within 60 minutes by team Apr 2023 to Mar 2024



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N.b. this is benchmarking data on response for a defined group of transfers, this does not represent overall "emergency workload"

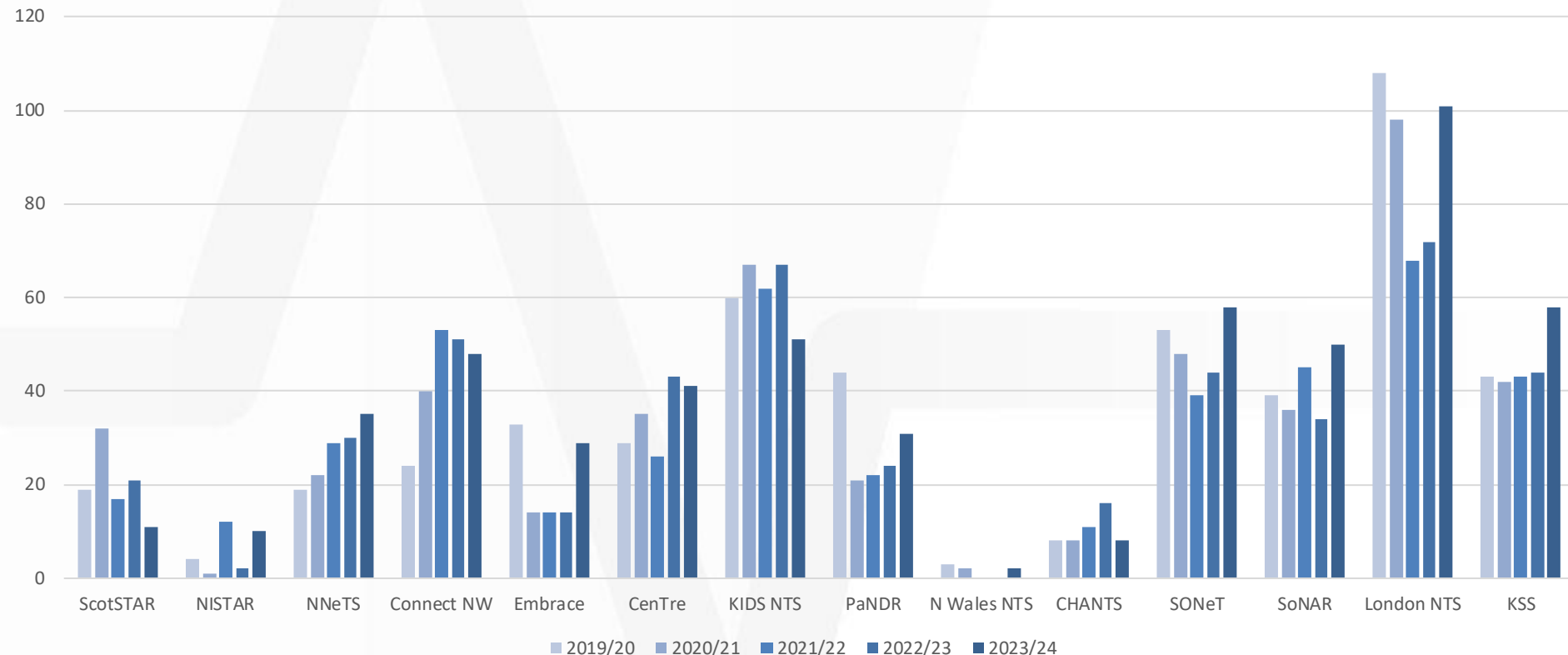


# Trends in number of Immediate Dispatch transfers dispatched within 60 minutes by team, 2019/20 to 2023/24



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N.b. this is benchmarking data on response for a defined group of transfers, this does not represent overall "emergency workload"

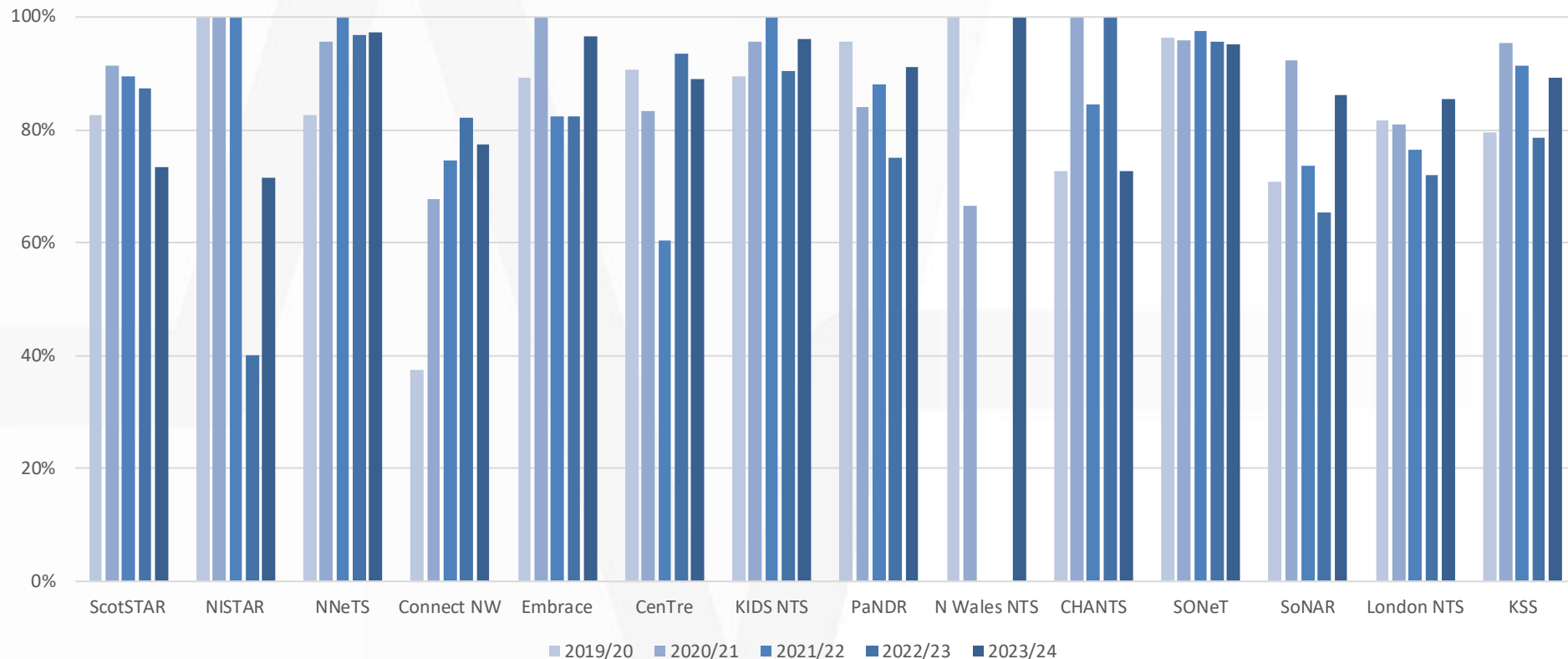


# Trends in percentage of Immediate Dispatch transfers dispatched within 60 minutes by team, 2019/20 to 2023/24



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N.b. this is benchmarking data on response for a defined group of transfers, this does not represent overall "emergency workload"



# Team Uplift Transfers in their commissioned area



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## Data on

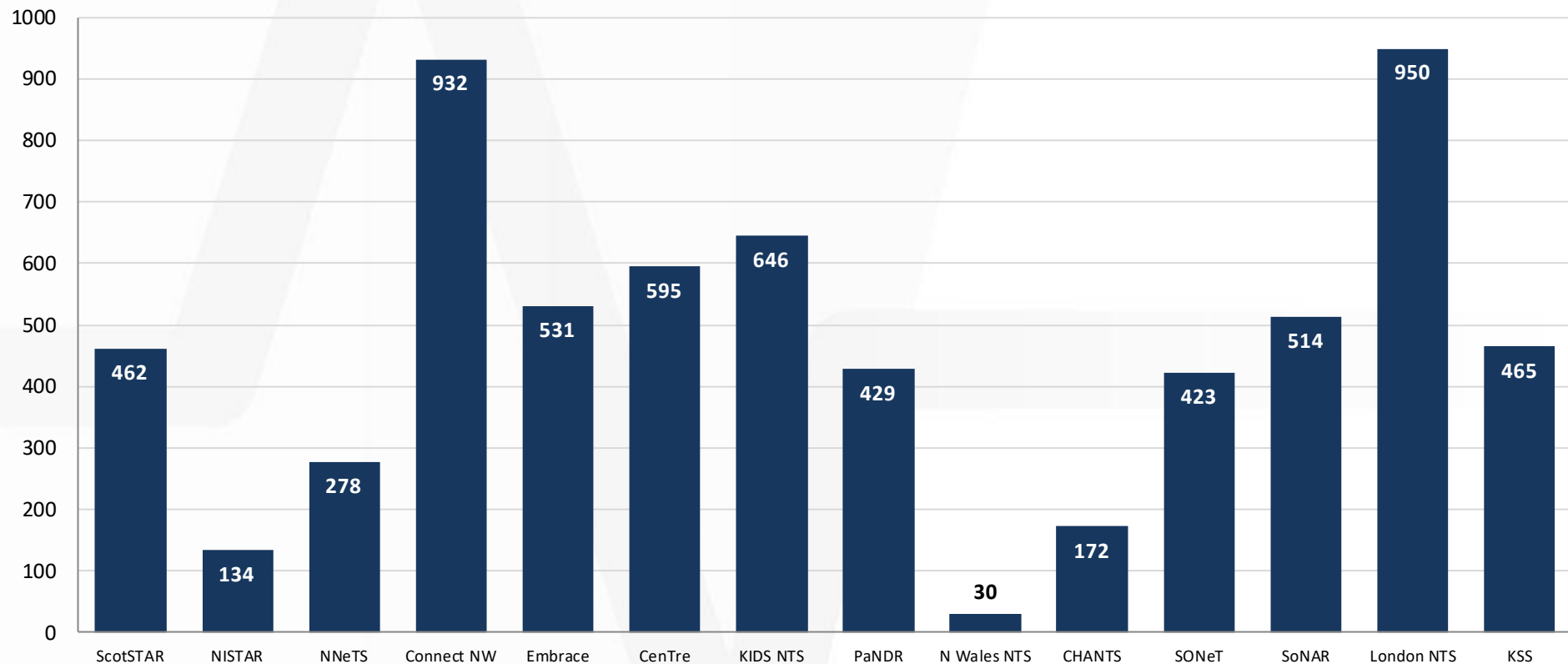
- Uplift Transfers by the Dedicated Neonatal Team Transfers in their commissioned area
  - Standard: 95% of uplift transfers within area by dedicated team

# Numbers of Uplift transfers in dedicated area 2023/24



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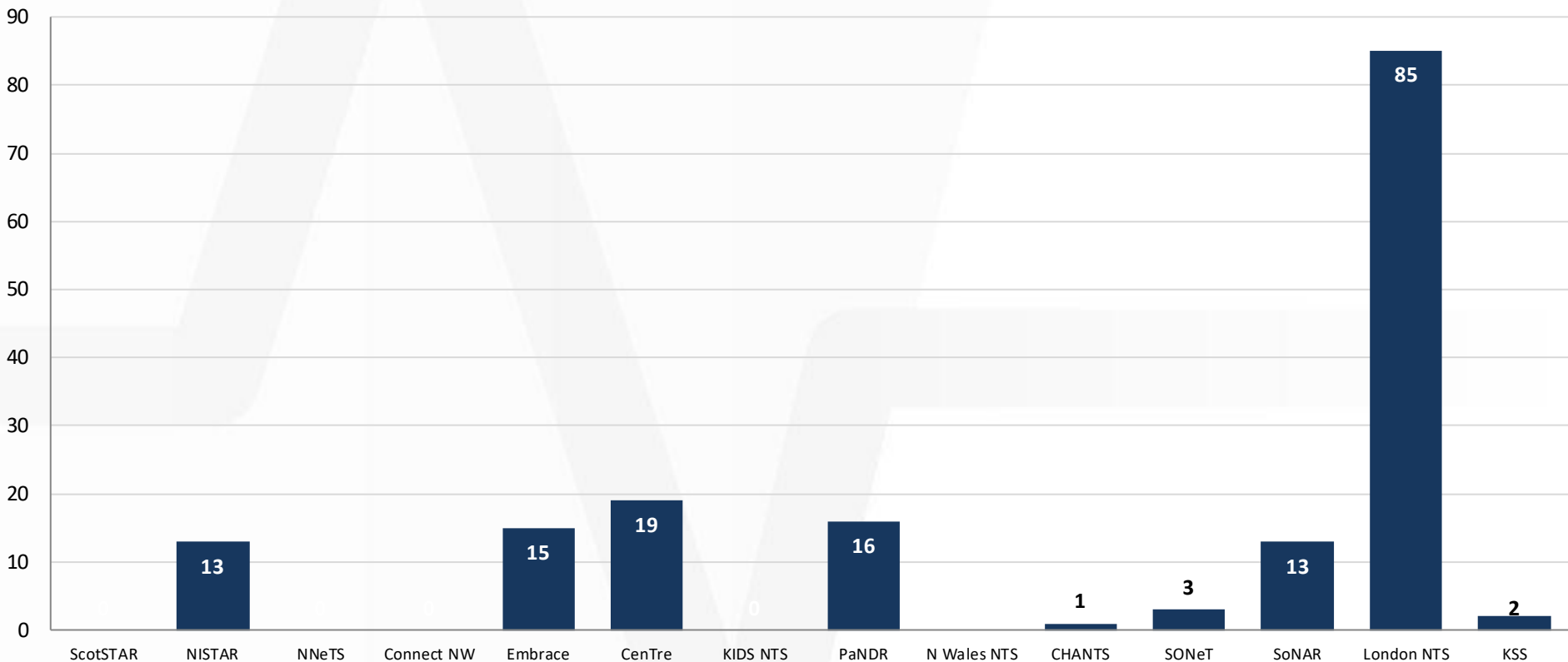


# Numbers of Uplift transfers conducted by other teams in dedicated area



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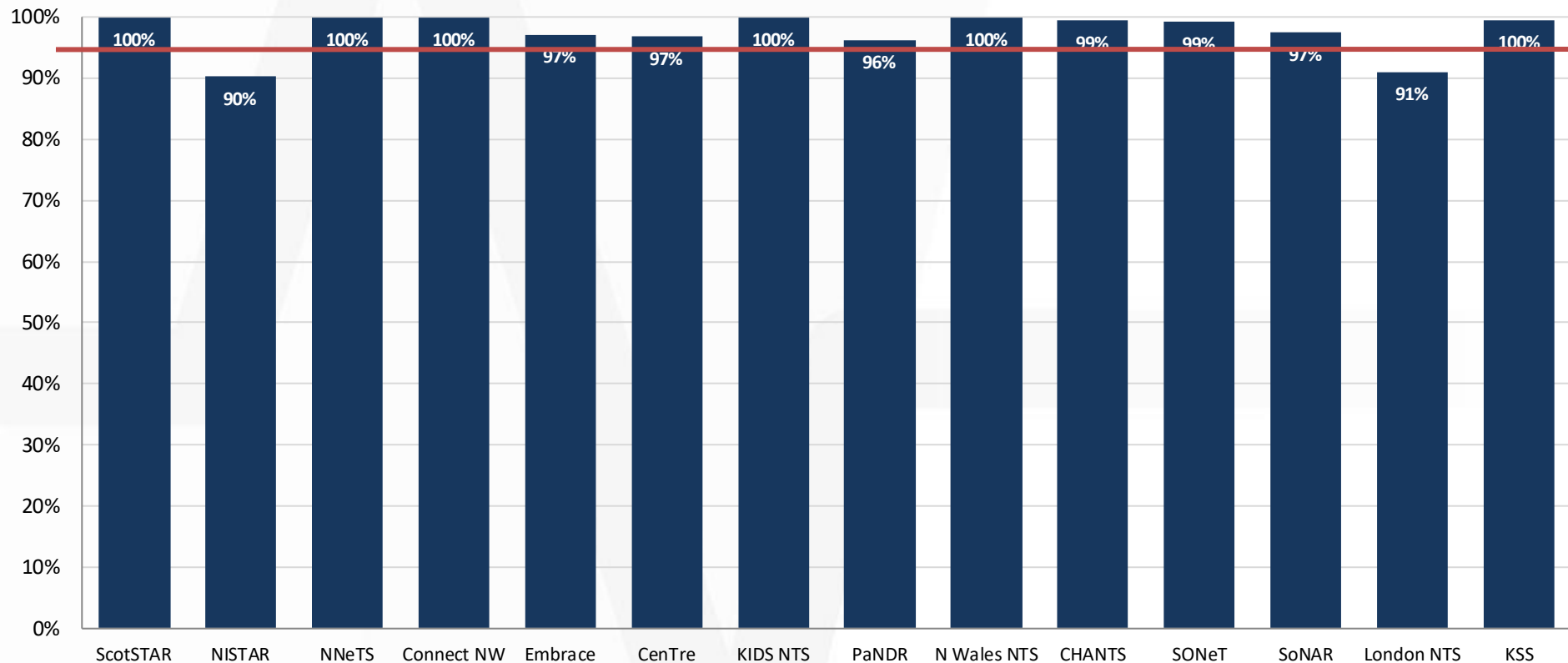


# Uplift transfers by Dedicated team in own area as a percentage of total uplift transfers



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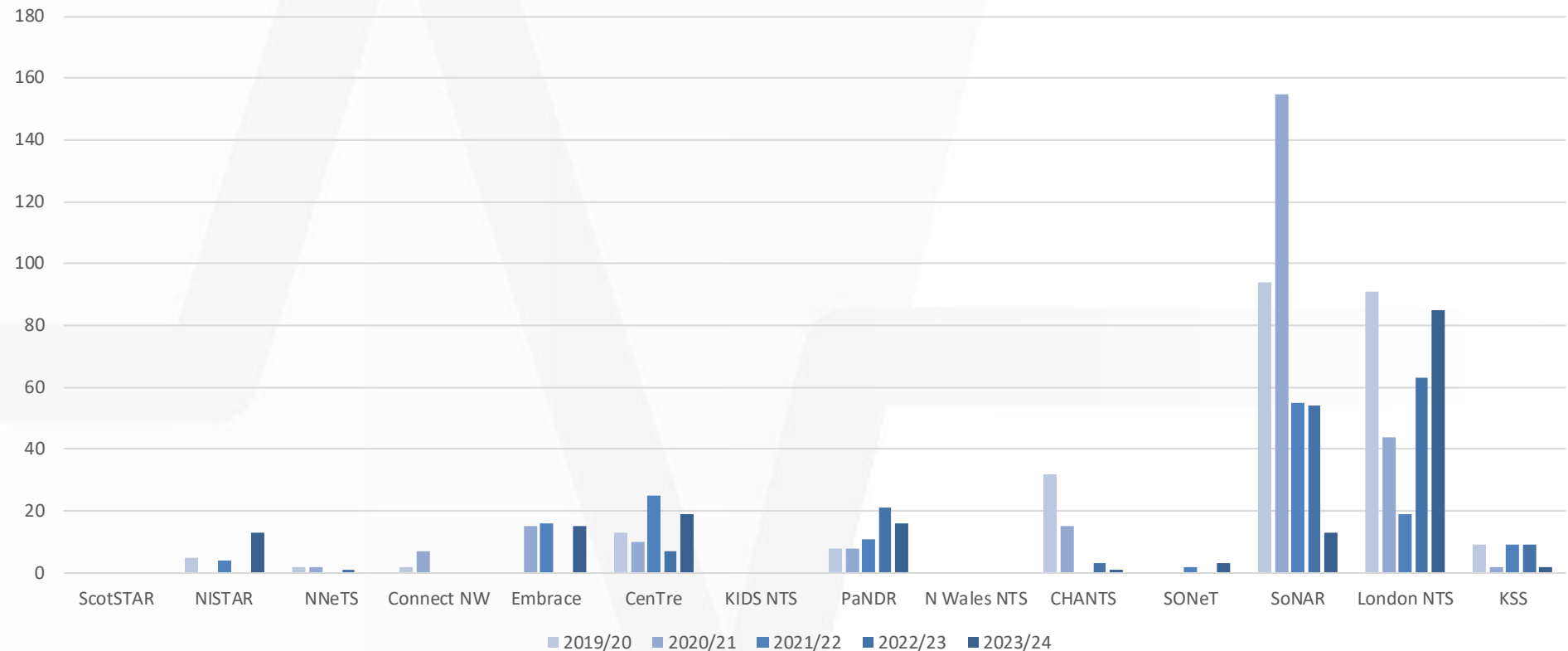


# Trends in number of Uplift transfers by other team in dedicated area 2019/20 to 2023/24



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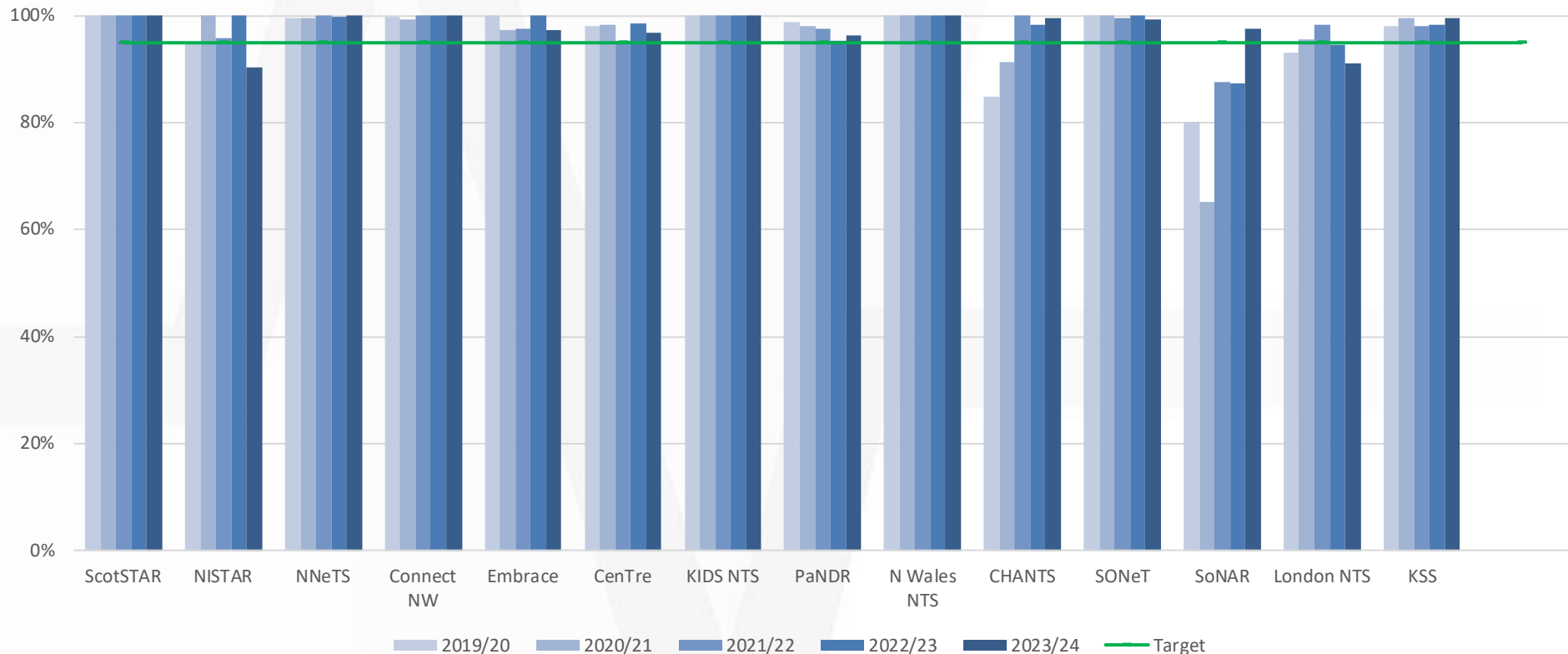


# Trends in Uplift transfers by Dedicated team in own area, as a percentage of uplift transfers 2019/20 to 2023/24



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# Uplift Transfer response times



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## Data on

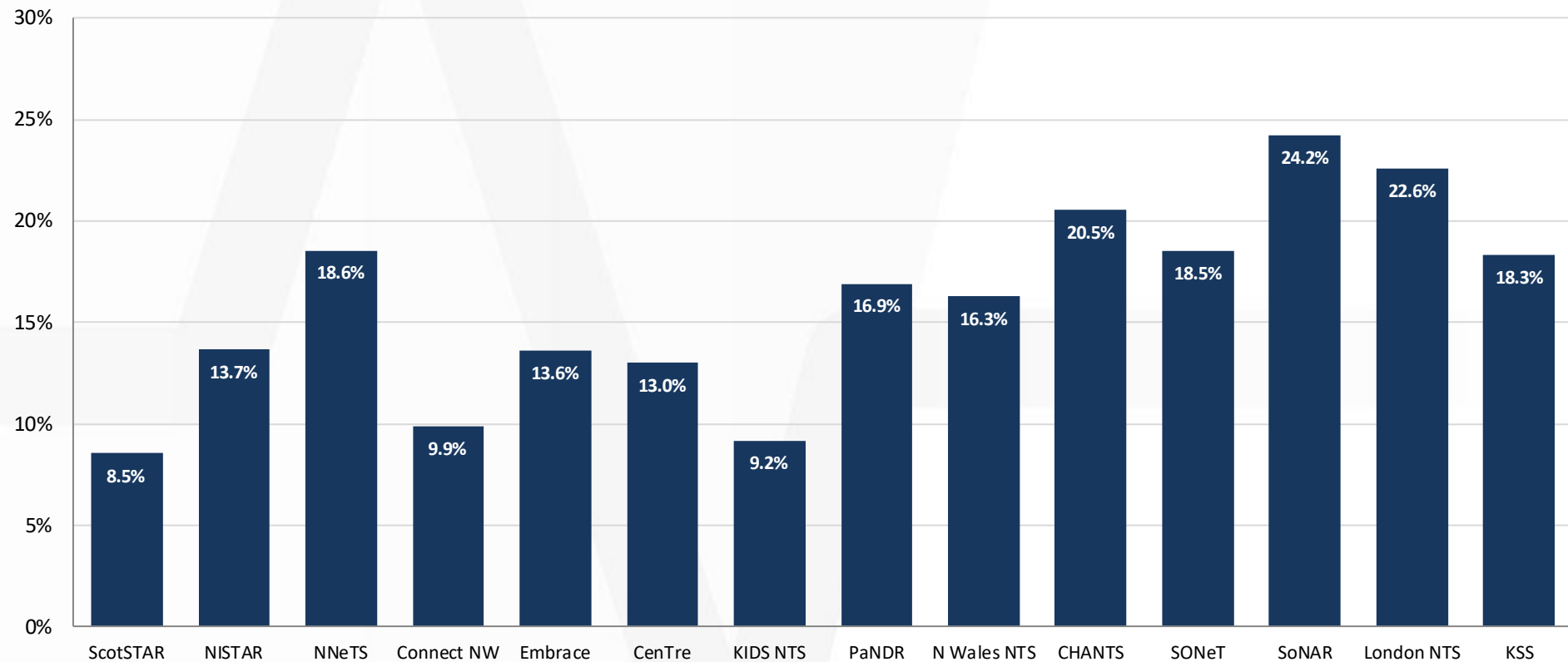
- Proportion of ICU uplift transfers in the first 72 hours of life from level 1 and 2 units where the team arrive within 3.5 hours of referral

# Intensive Care Uplift Transfers as a Percentage of total transfers 2023/24



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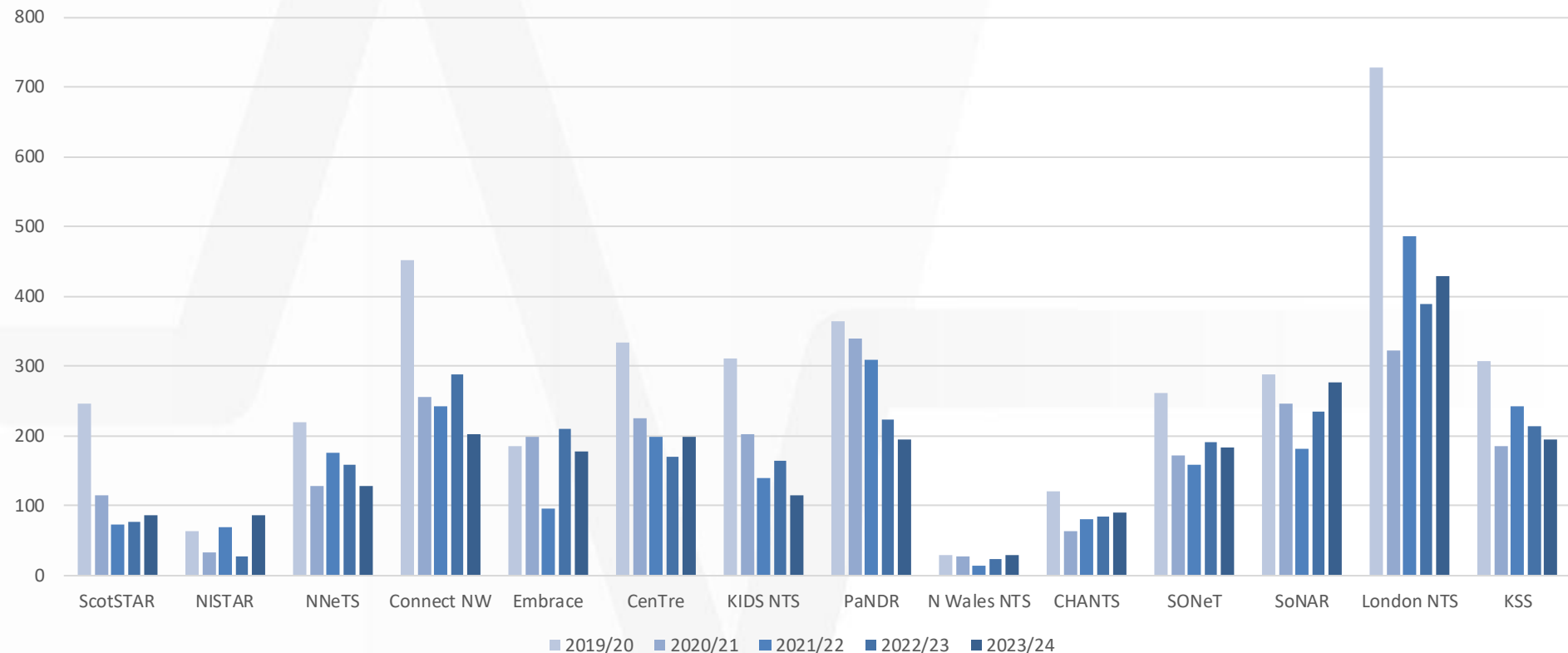


# Trends in the number of Intensive Care Uplift transfers over time



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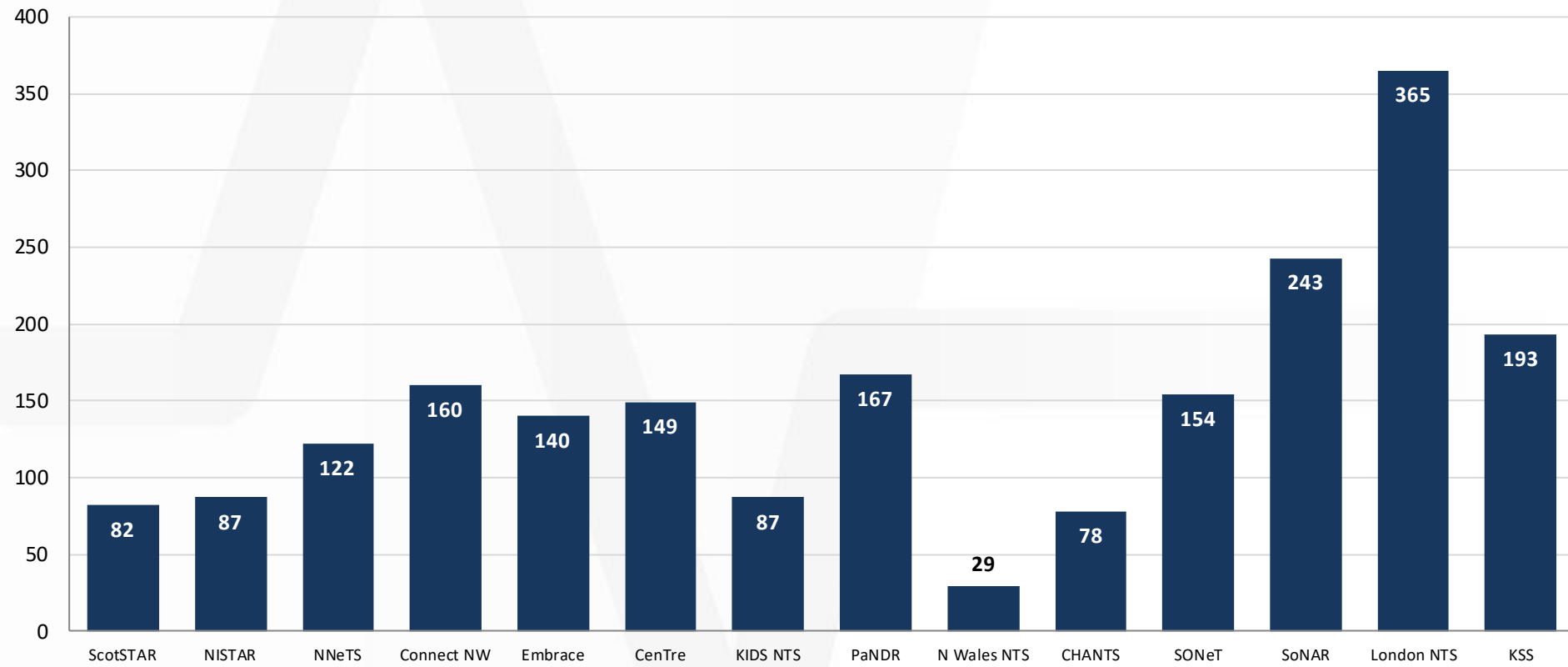


# Team arrived with the patient within 3.5 hours of the start of the referring call (Intensive care; uplift), numbers, 2023/24



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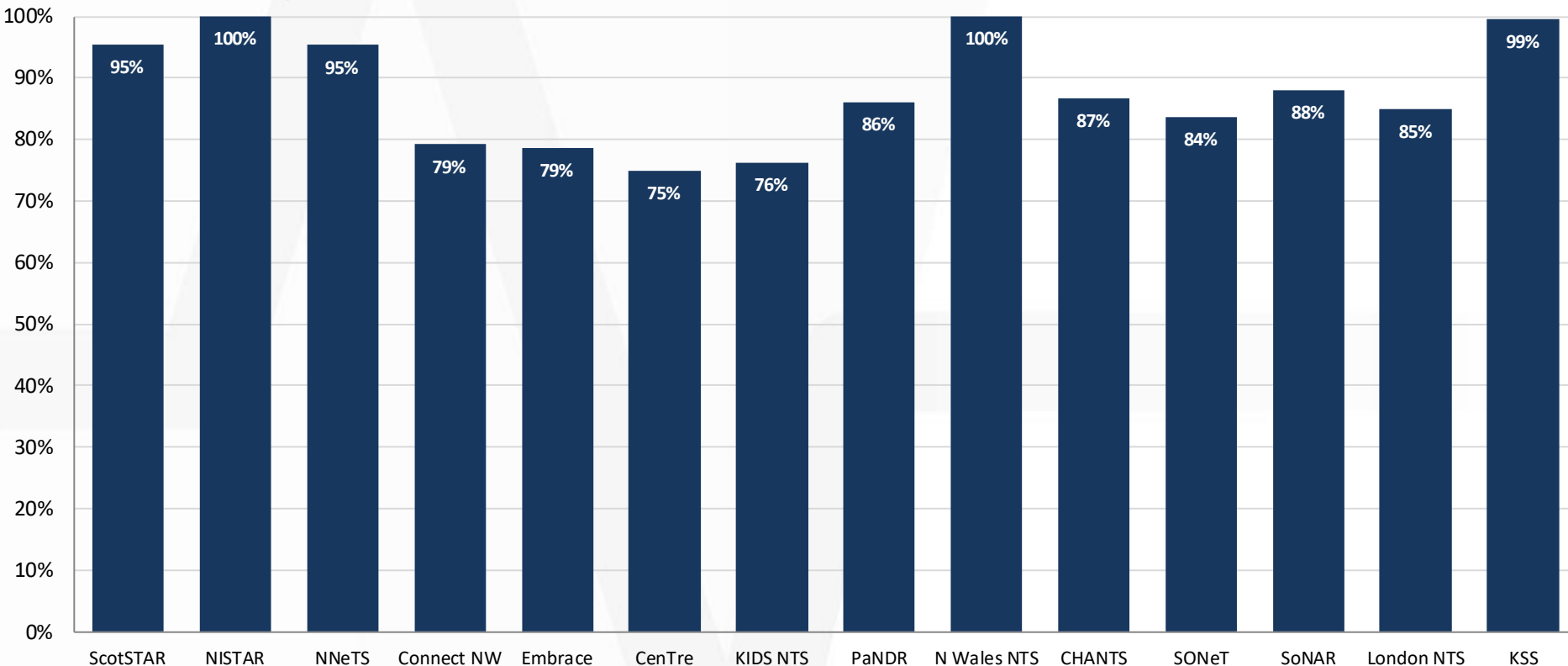


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Team arrived with the patient within 3.5 hours of the start of the referring call (Intensive care, uplift first 72 hours of life from level 1 and 2 units) as a percentage of those transfers 2023/24



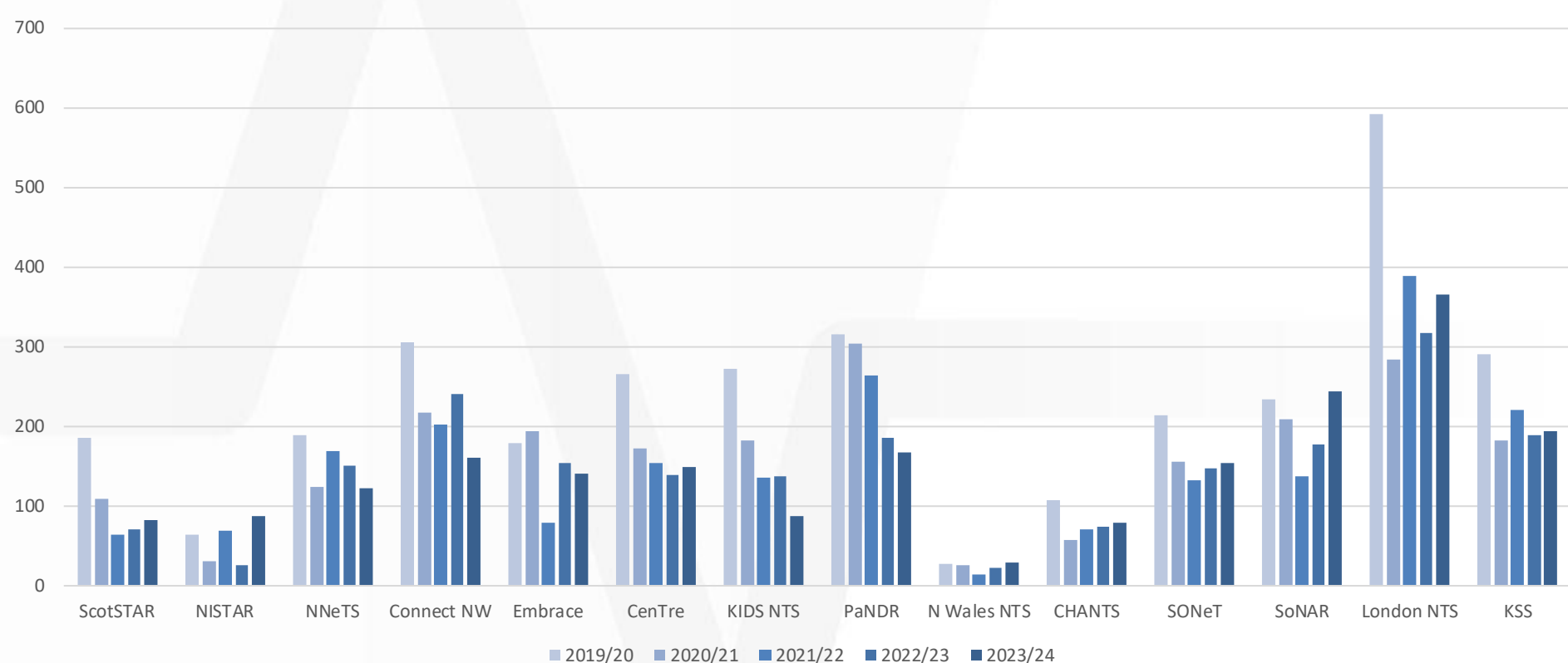


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# Trends in team arrived with the patient within 3.5 hours of the start of the referring call of ICU uplift transfers (Intensive care, uplift first 72 hours of life from level 1 and 2 units) by team 2019/20 to 2023/24



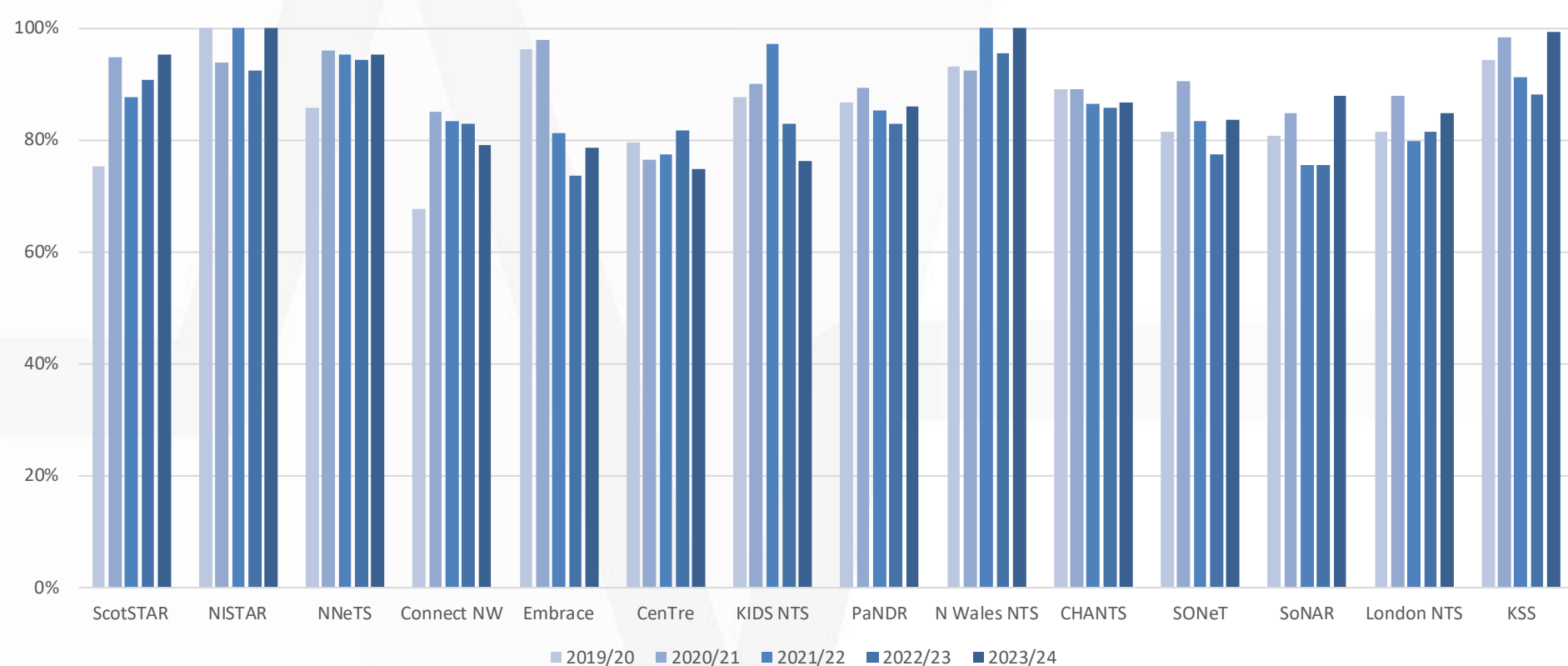


# Trends in team arrived with the patient within 3.5 hours of the start of the referring call as a percentage of ICU uplift transfers (Intensive care, uplift first 72 hours of life from level 1 and 2 units) by team 2019/20 to 2023/24



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# Stabilisation times



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## Data on

- Time from first assessment to departure from referring centre uplift ICU transfers, first 3 days of life from level 1 and 2 units

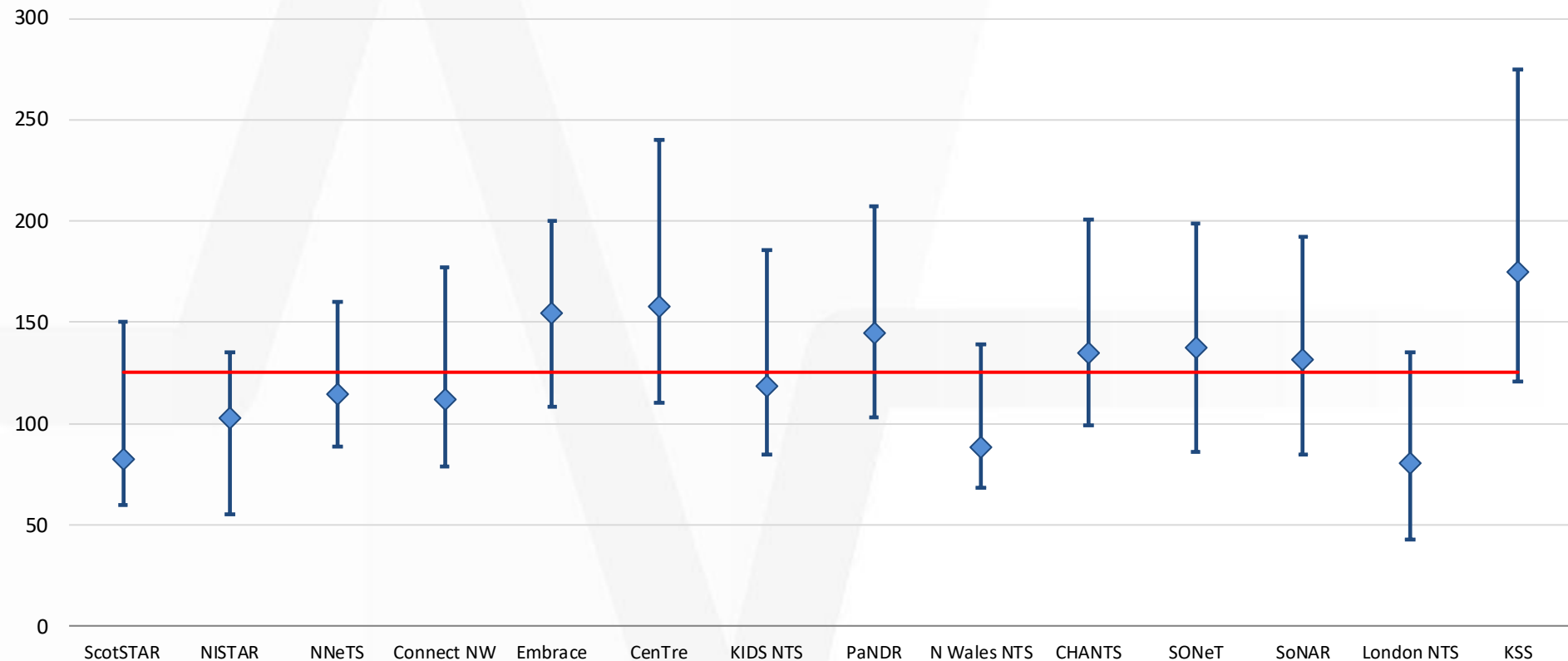
# Stabilising time (minutes), 2023/24

Median (25<sup>th</sup> & 75<sup>th</sup> centiles), uplift ICU transfers, first 3 days of life from level 1 and 2 units



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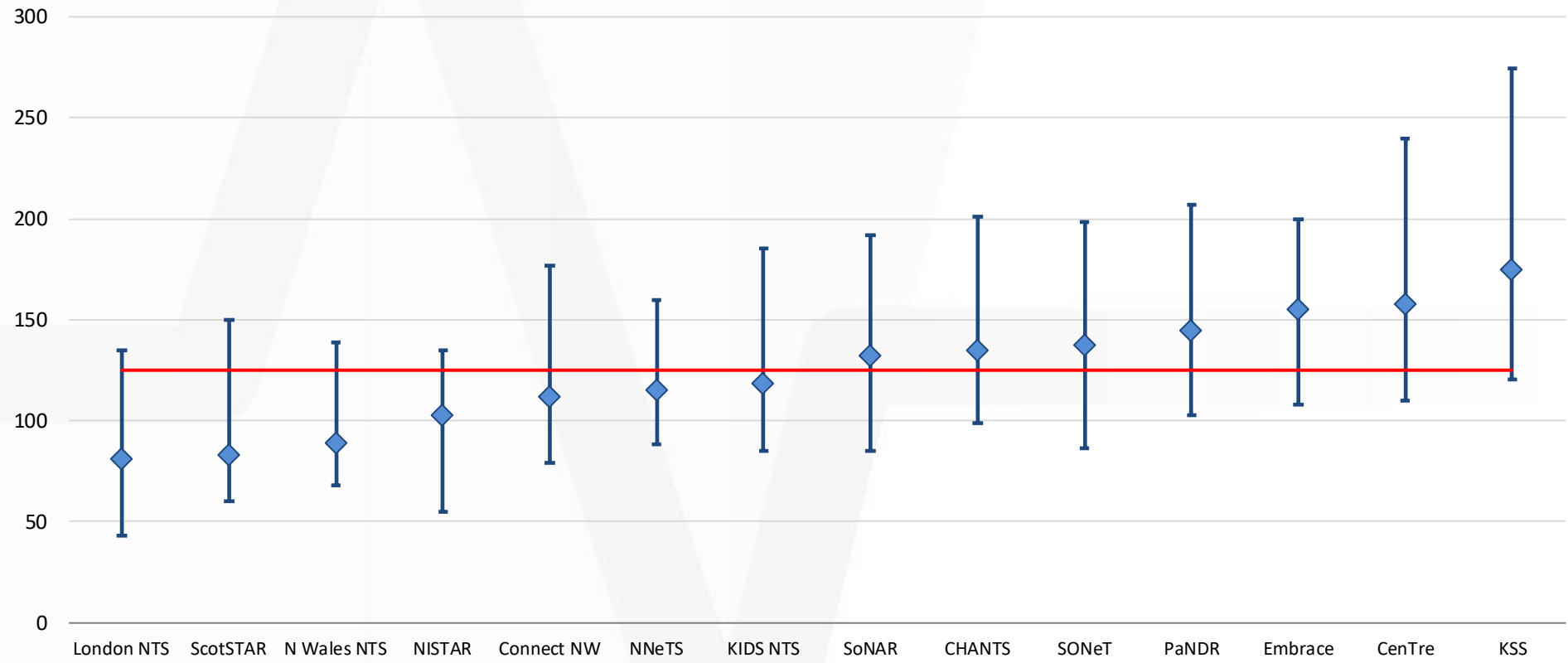
# Stabilising time (minutes), 2023/24

Median (25<sup>th</sup> & 75<sup>th</sup> centiles), uplift/ICU transfers, first 3 days of life from level 1 and 2 units - ranked



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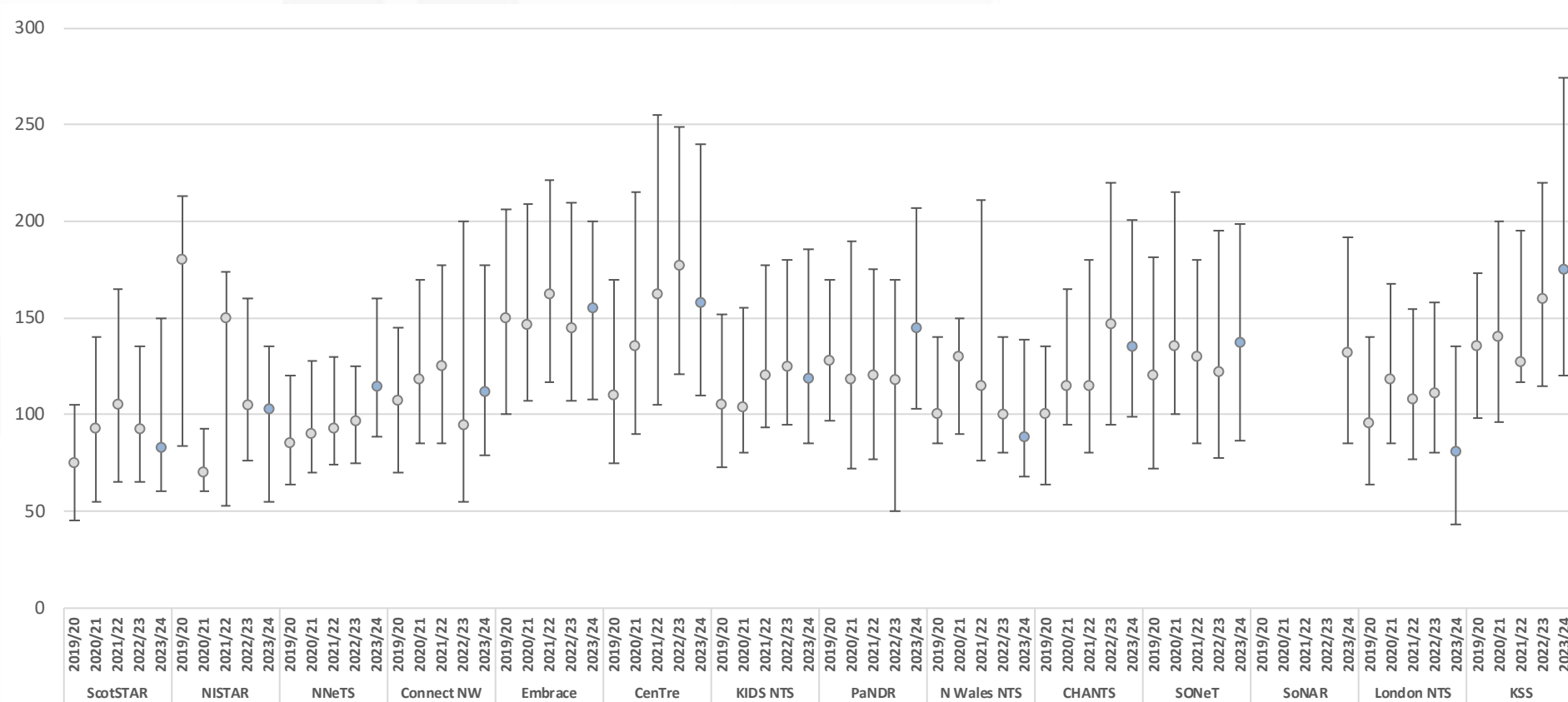
# Stabilising time (minutes), 2023/24

## Historical Times (25<sup>th</sup> centile, median and 75<sup>th</sup> centile)



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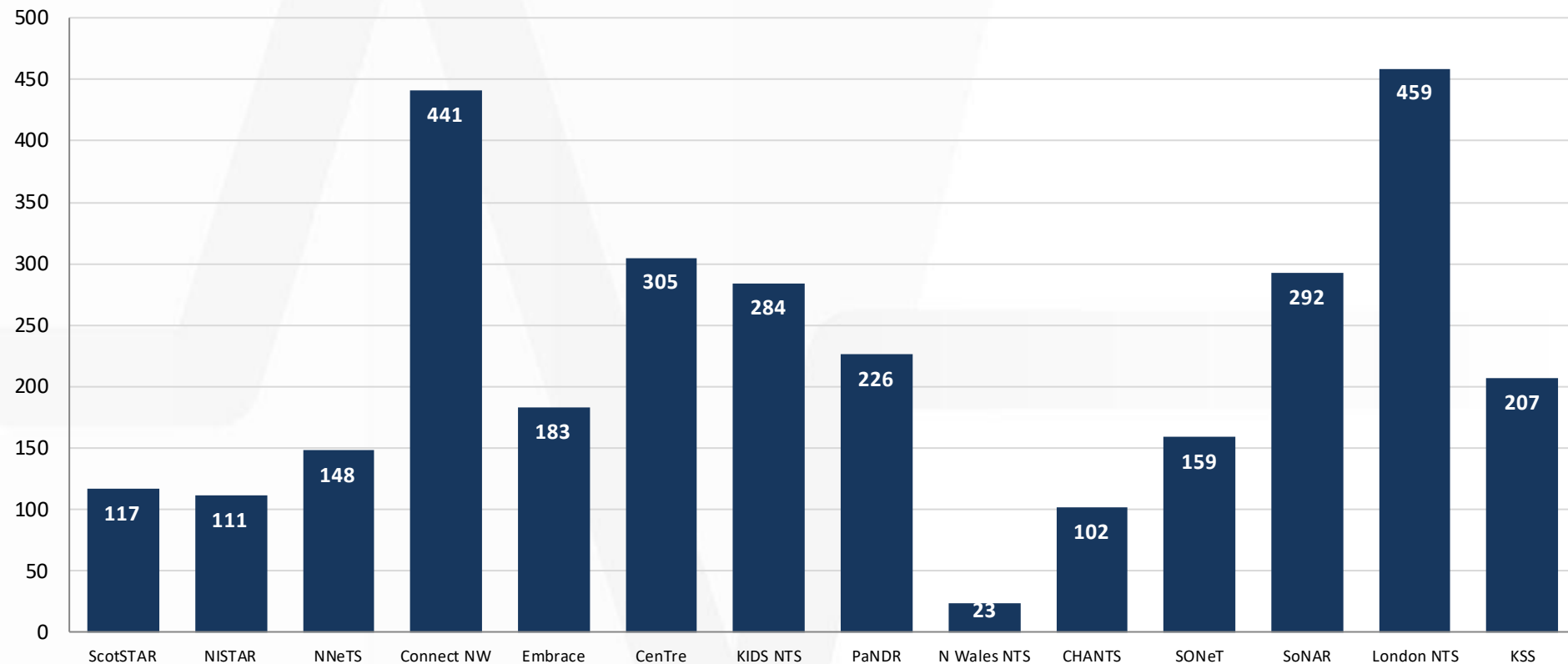
# Under and over ventilation

# Number of infants who are ventilated via an ETT in transit by team Apr 2023 to Mar 2024



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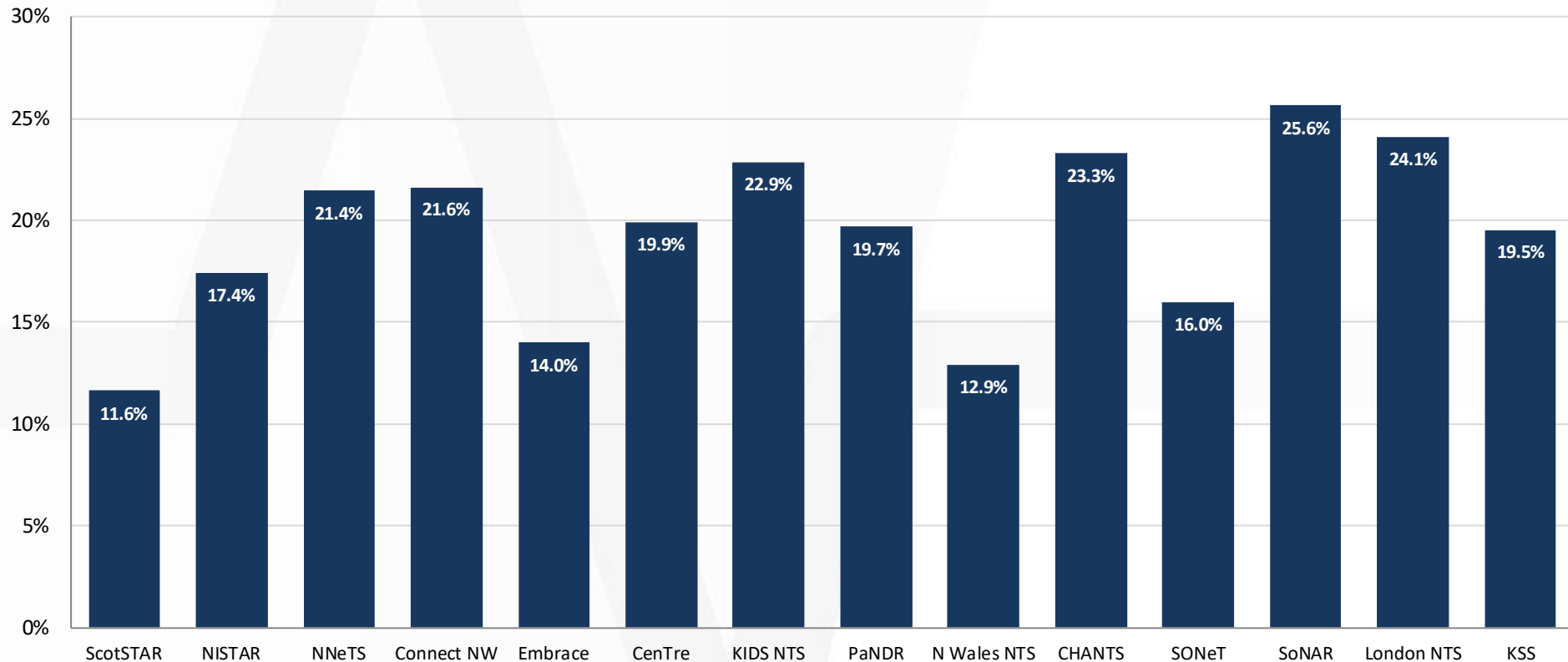


# Infants who are ventilated in transit as a percentage of total transfers, by team Apr 2023 to Mar 2024



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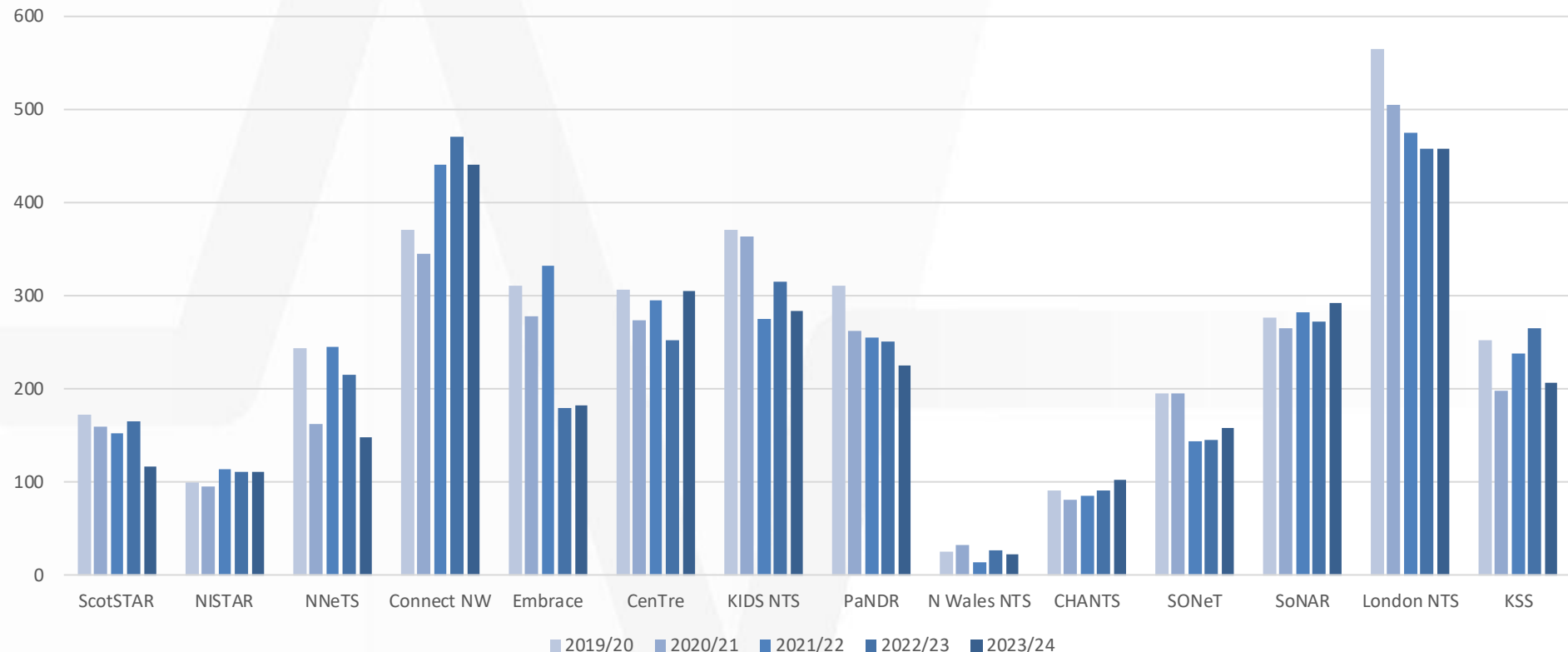


# Trends in numbers of infants ventilated in transit by team, 2019/20 to 2023/24



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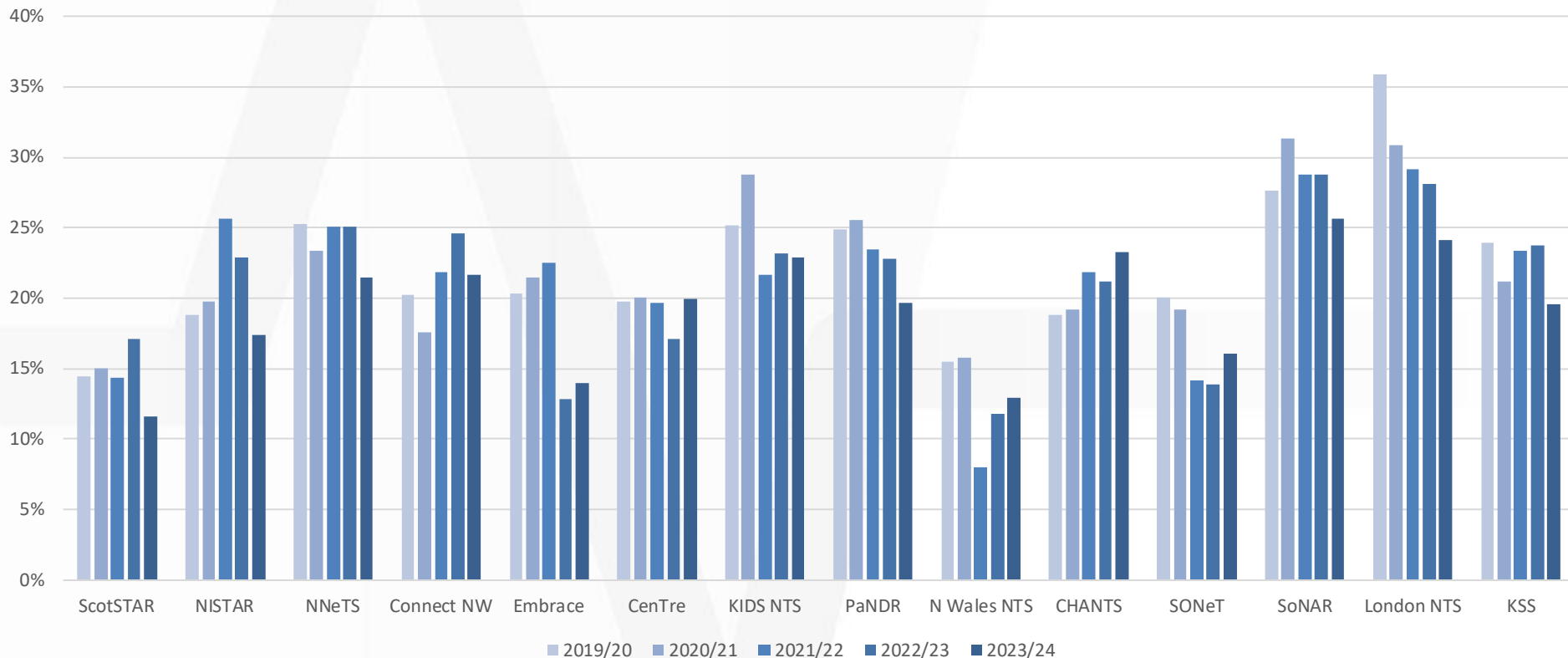


# Trends in infants ventilated in transit as a percentage of total transfers, by team 2019/20 to 2023/24



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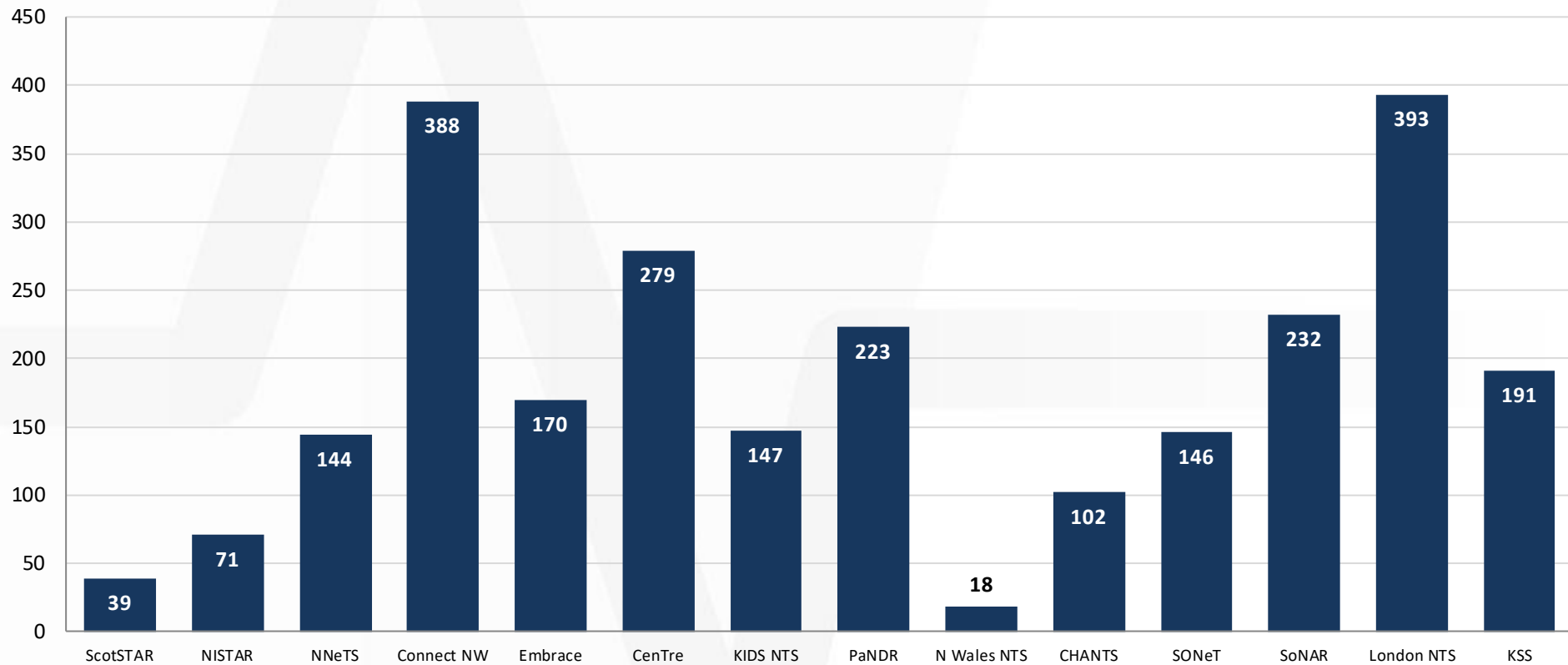


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# Number of infants ventilated in transfer with a pCO<sub>2</sub> recorded on completion of the transfer by team Apr 2023 to Mar 2024

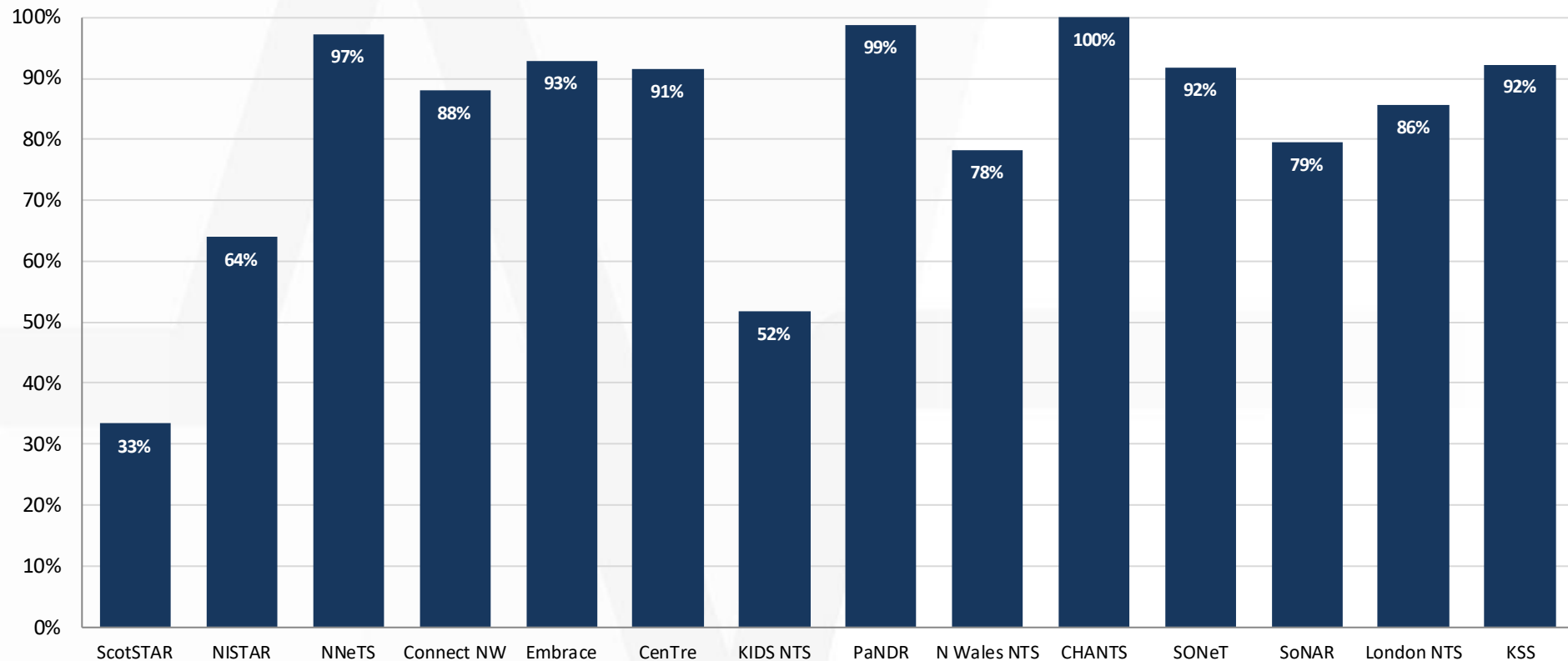


# Ventilated patients with a pCO<sub>2</sub> recorded on completion of transfer, as a percentage of ventilated transfers by team Apr 2023 to Mar 2024



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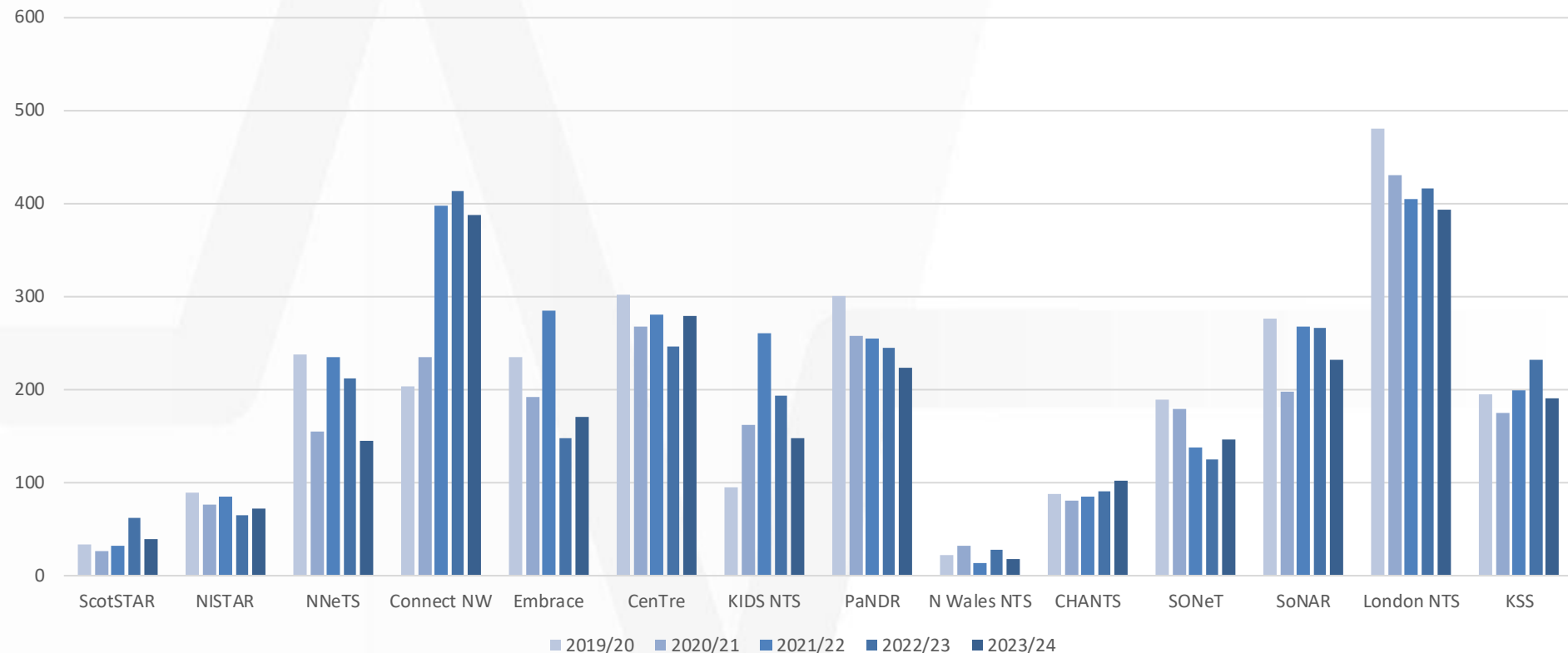


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# Trends in number of ventilated transfers with a pCO<sub>2</sub> recorded on completion of the transfer/team by team, 2019/20 to 2023/24

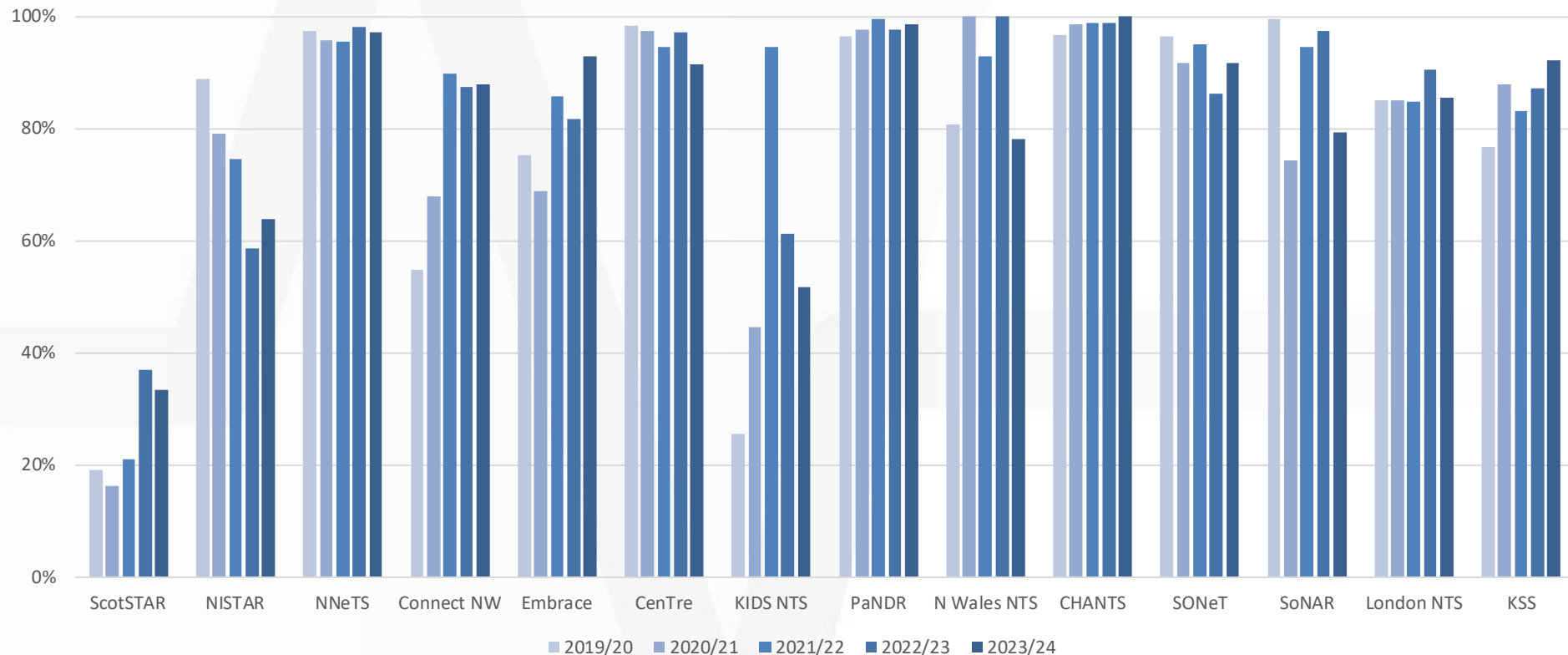


# Trends in percentages of ventilated infants with a pCO<sub>2</sub> recorded on completion of the transfer, by team, 2019/20 to 2023/24



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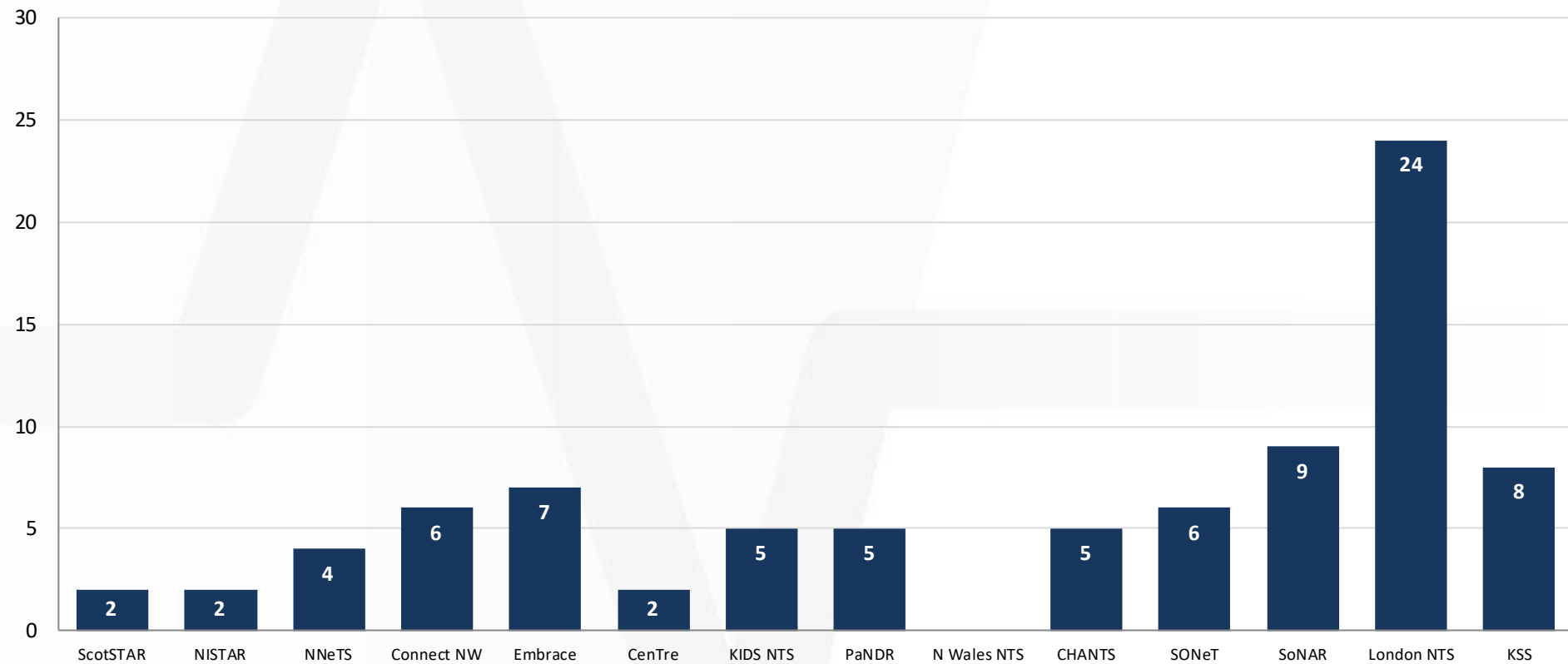


# Numbers of ventilated patients with a pCO<sub>2</sub> <4 kPa on completion of transfer, by team Apr 2023 to Mar 2024



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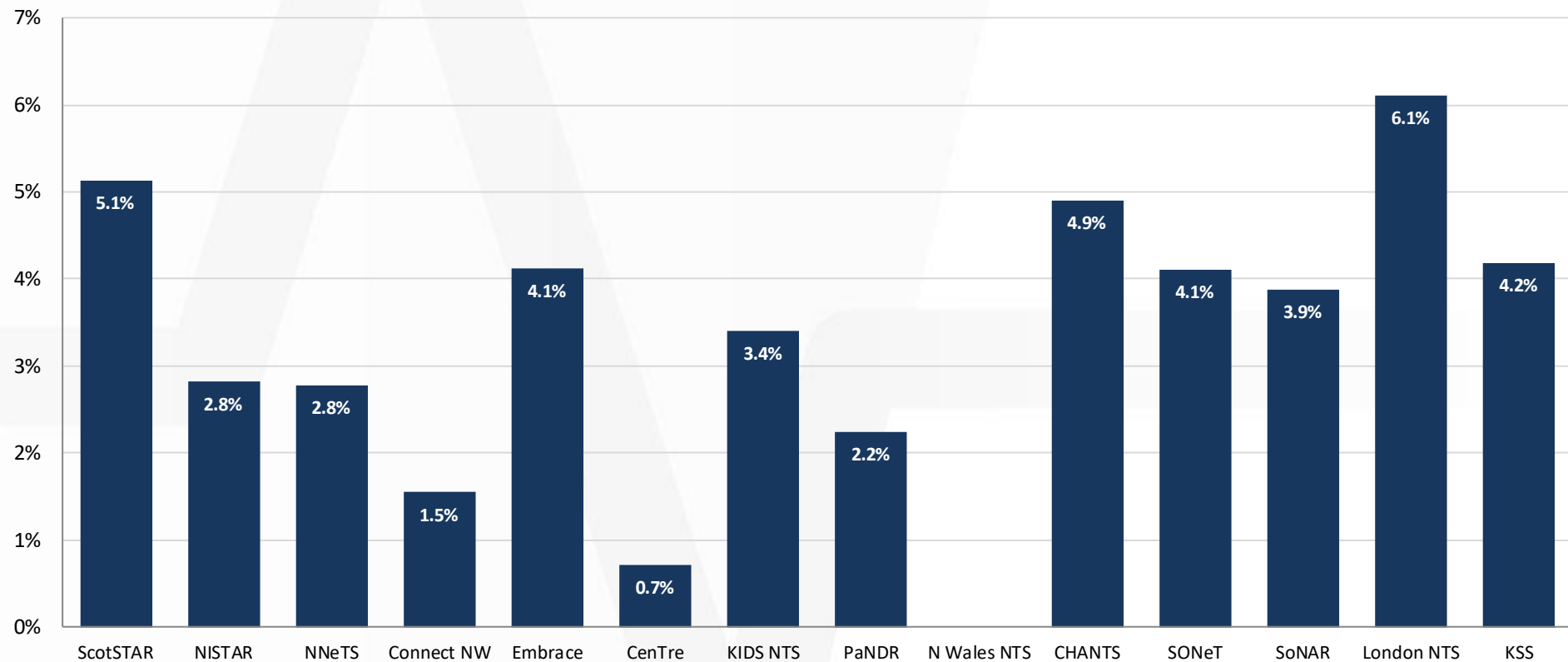


# pCO<sub>2</sub> <4 on completion of transfer as a percentage of ventilated transfers by team, 2023/24



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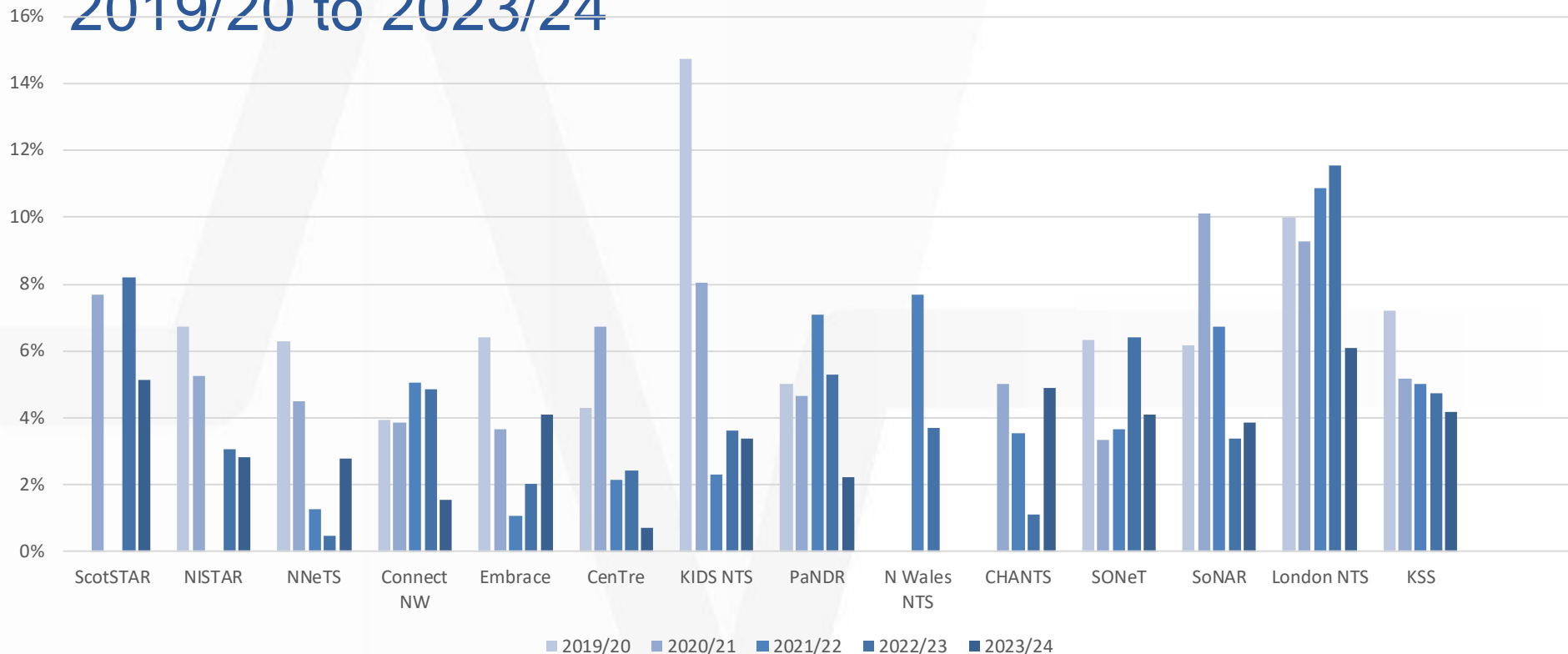


# Trends in infants with $p\text{CO}_2 < 4\text{kPa}$ on completion of transfer, as a percentage of ventilated transfers with $p\text{CO}_2$ recorded, by team 2019/20 to 2023/24



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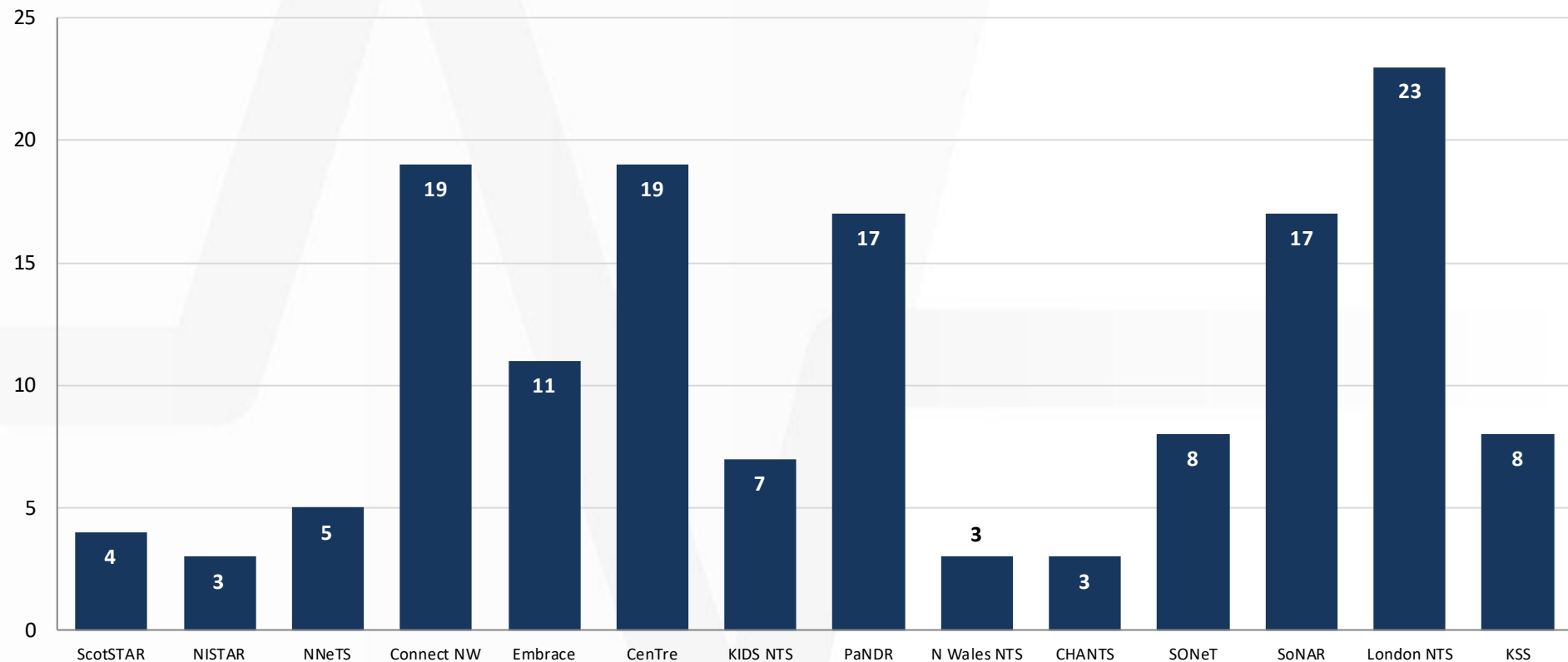


# Numbers where $p\text{CO}_2 > 7$ kPa and $\text{pH} < 7.2$ on completion of transfer by team 2023/24



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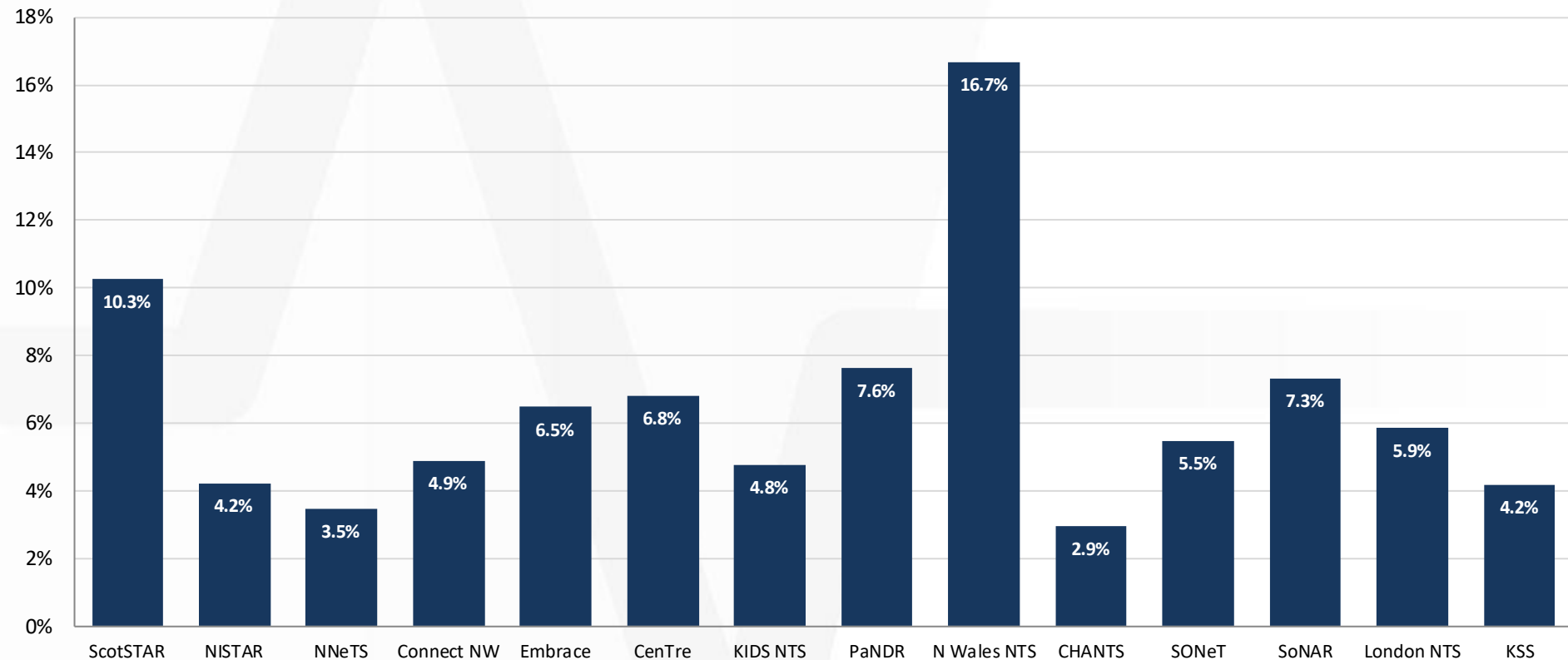


# pCO<sub>2</sub> >7 kPa and pH <7.2 on completion of transfer as a percentage of ventilated transfers with pCO<sub>2</sub> recorded by team 2023/24



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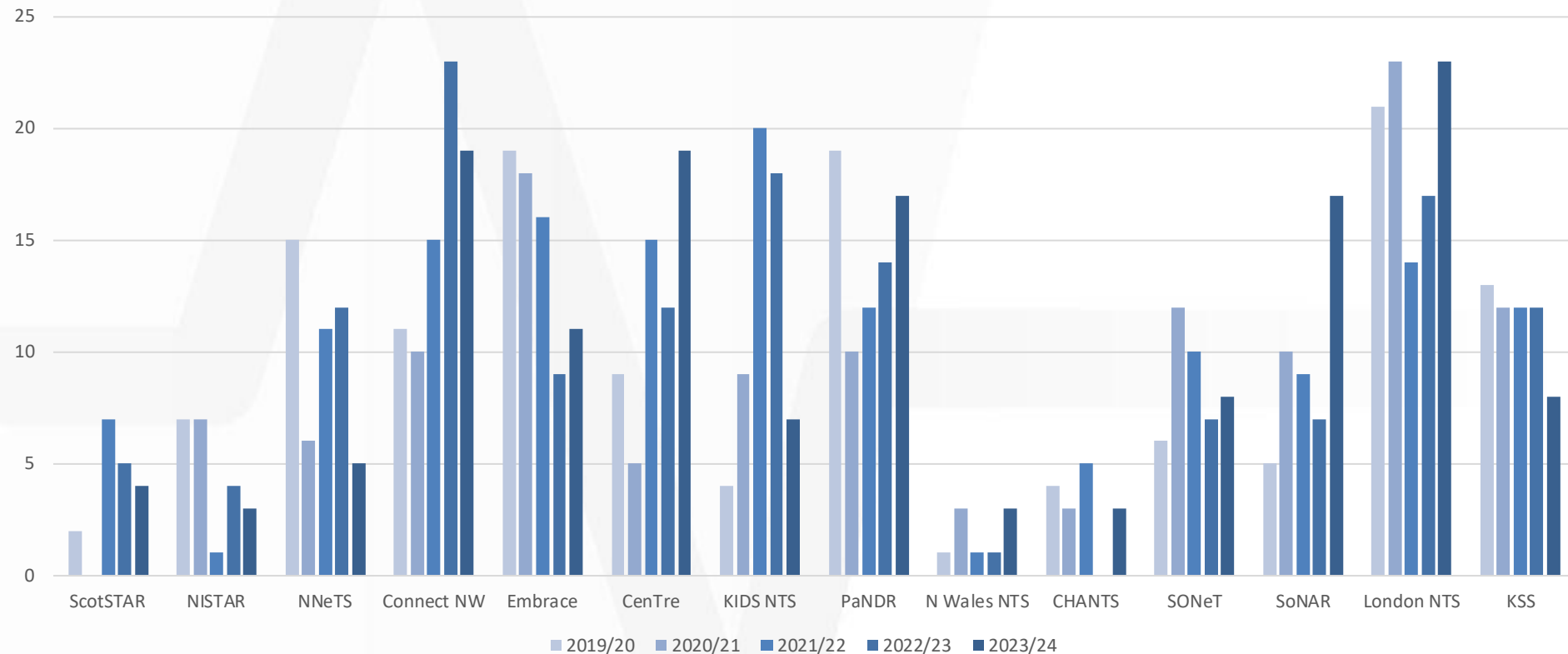


# Trends in numbers where CO<sub>2</sub> >7 kPa and pH <7.2 on completion of transfer by team 2019/20 to 2023/24



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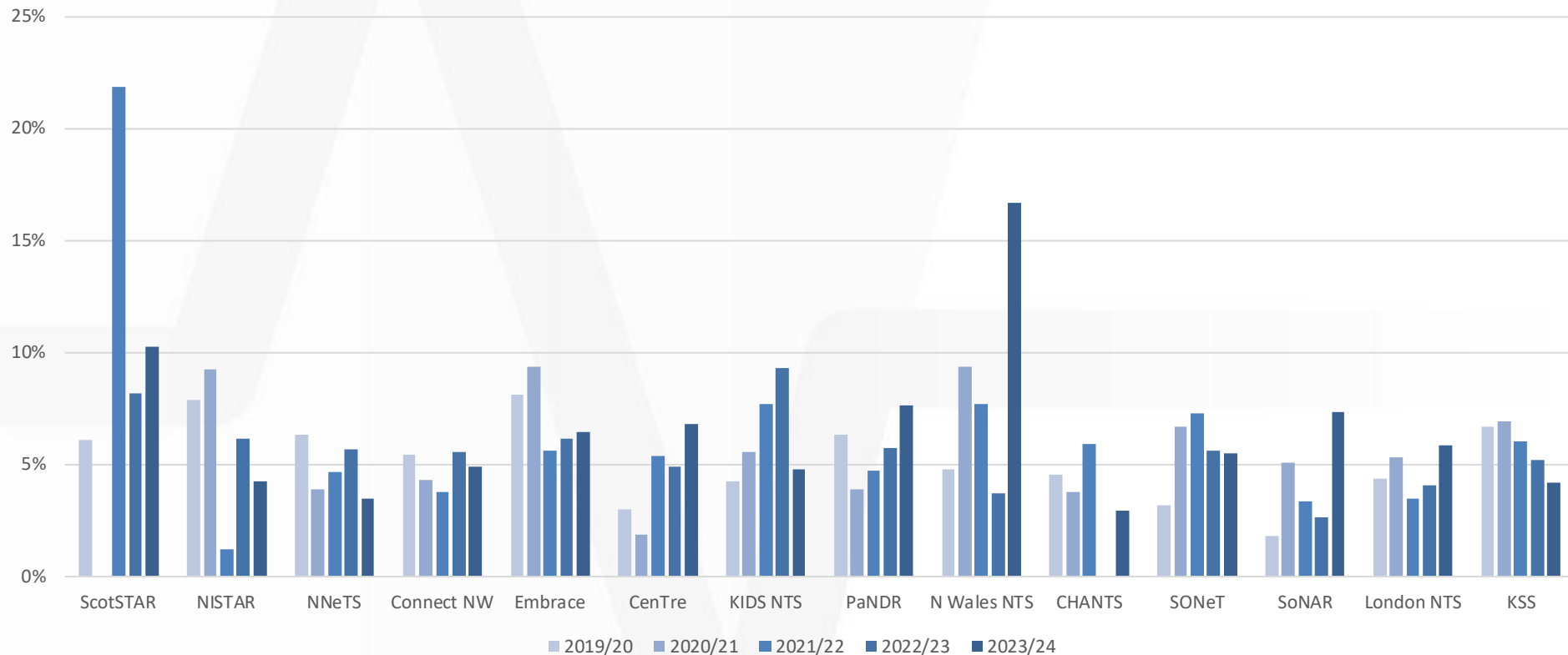
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# Trends in $p\text{CO}_2 > 7 \text{ kPa}$ and $\text{pH} < 7.2$ on completion of transfer as a percentage of ventilated transfers by team 2019/20 to 2023/24



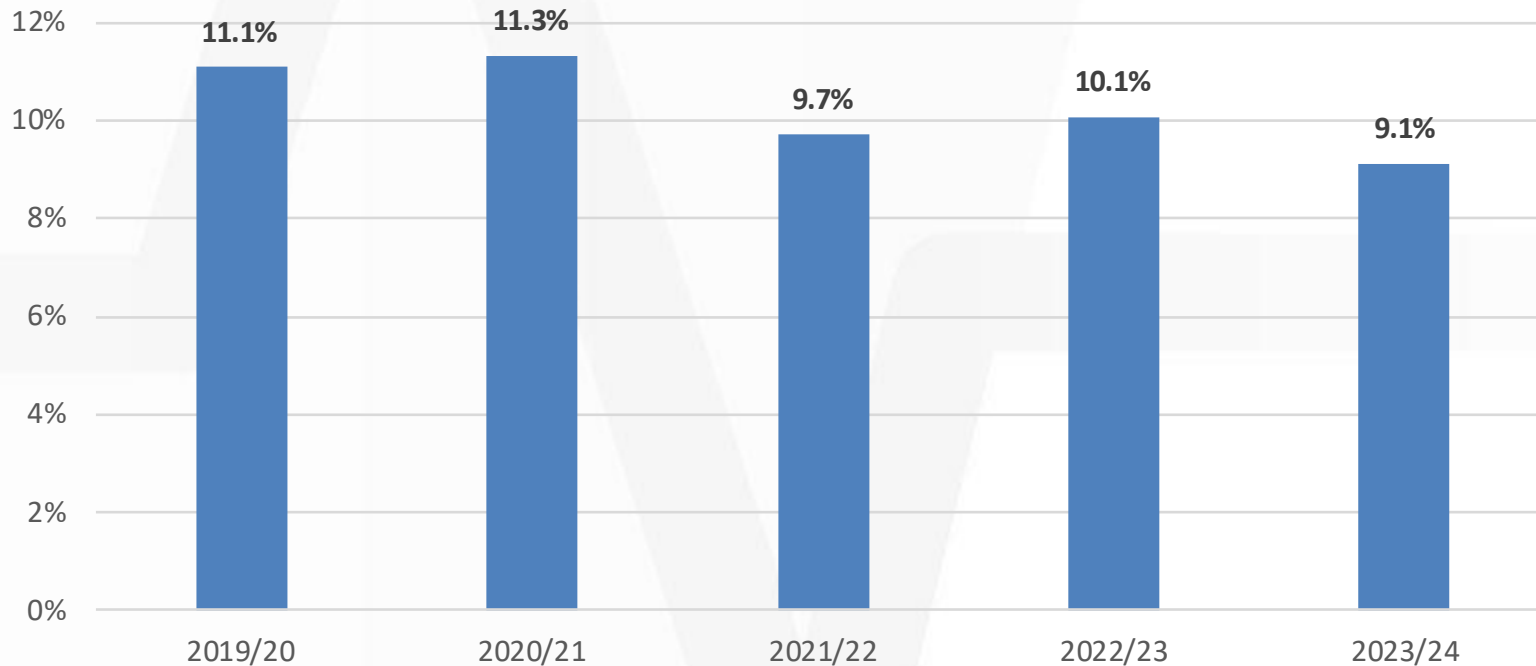
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# National CO2 out of target range data: Percentage of recorded pCO2 where pCO2 <4 kPa or pCO2 >7 kPa and pH <7.2

%age of pCO2 where pCO2 <4 kPa or pCO2 >7 kPa and pH <7.2



# Team characteristics



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- Data on

- 24 hour service
- Dedicated vehicles
- Cot bureau/In Utero transfer coordination
- Conference calling
- Eligible births not in a NICU centre review process
- Consultant presence
- HFO, iNO, VG cooling, ET/Tc CO<sub>2</sub>
- Bilious vomiting
- Parental feedback

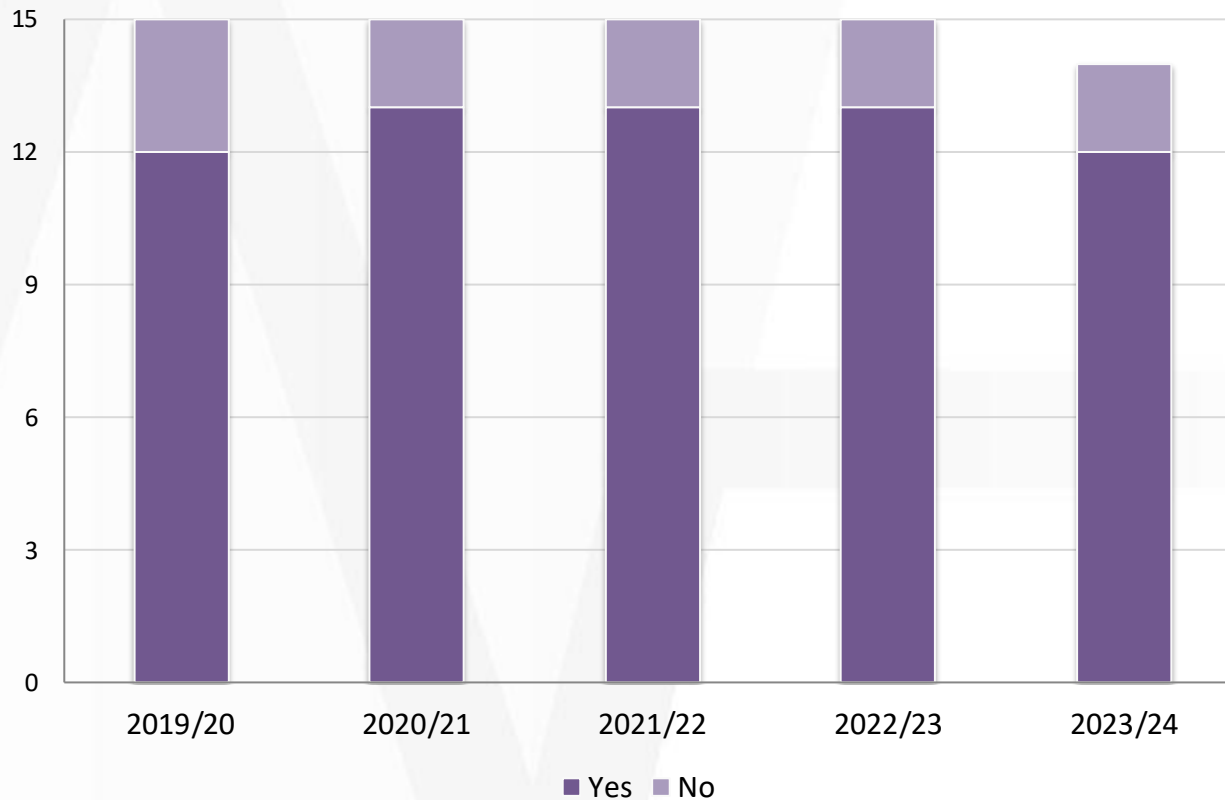
# Service Characteristics 2023/24

## 24 hour service



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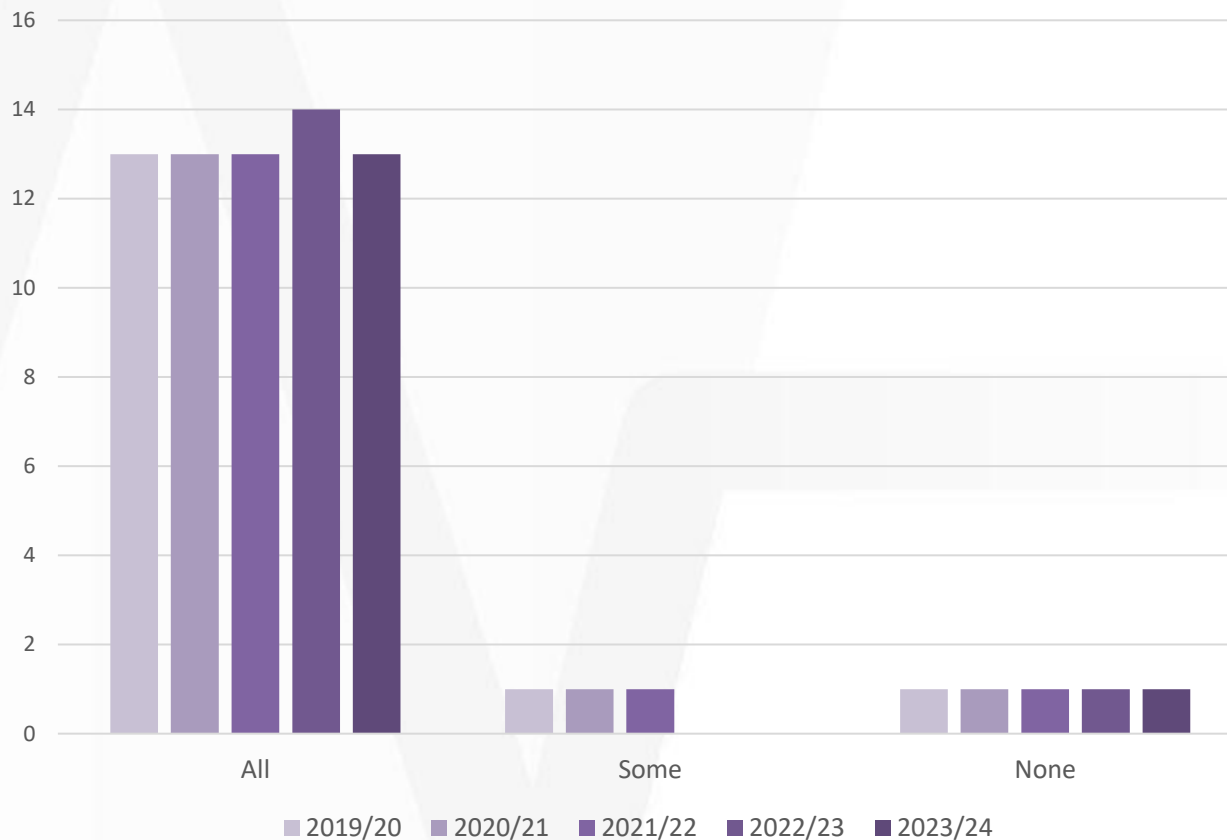
# Service Characteristics 2023/24

## Dedicated Vehicles



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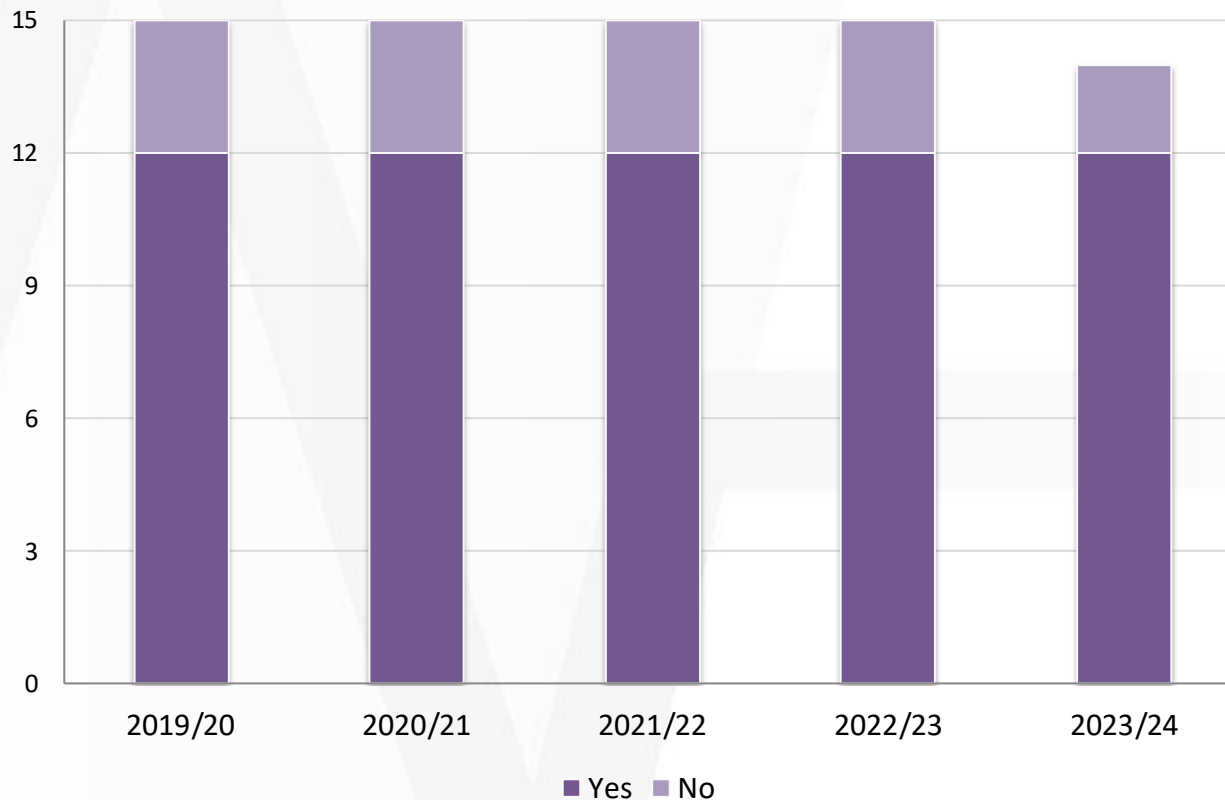
# Service Characteristics 2023/24

## Run a cot bureau



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# Service Characteristics 2023/24

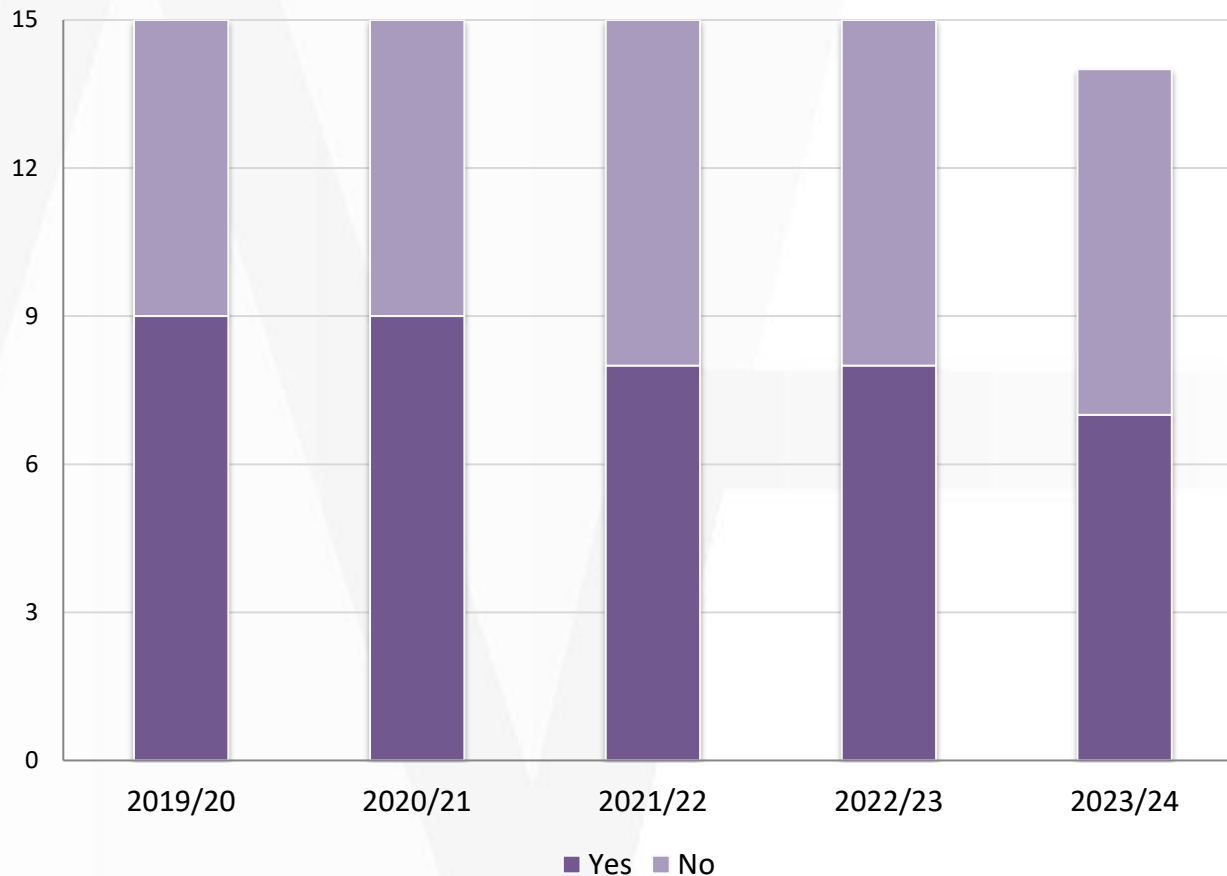


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## Do you offer support for locating appropriate maternal and neonatal beds for in-utero transfers?



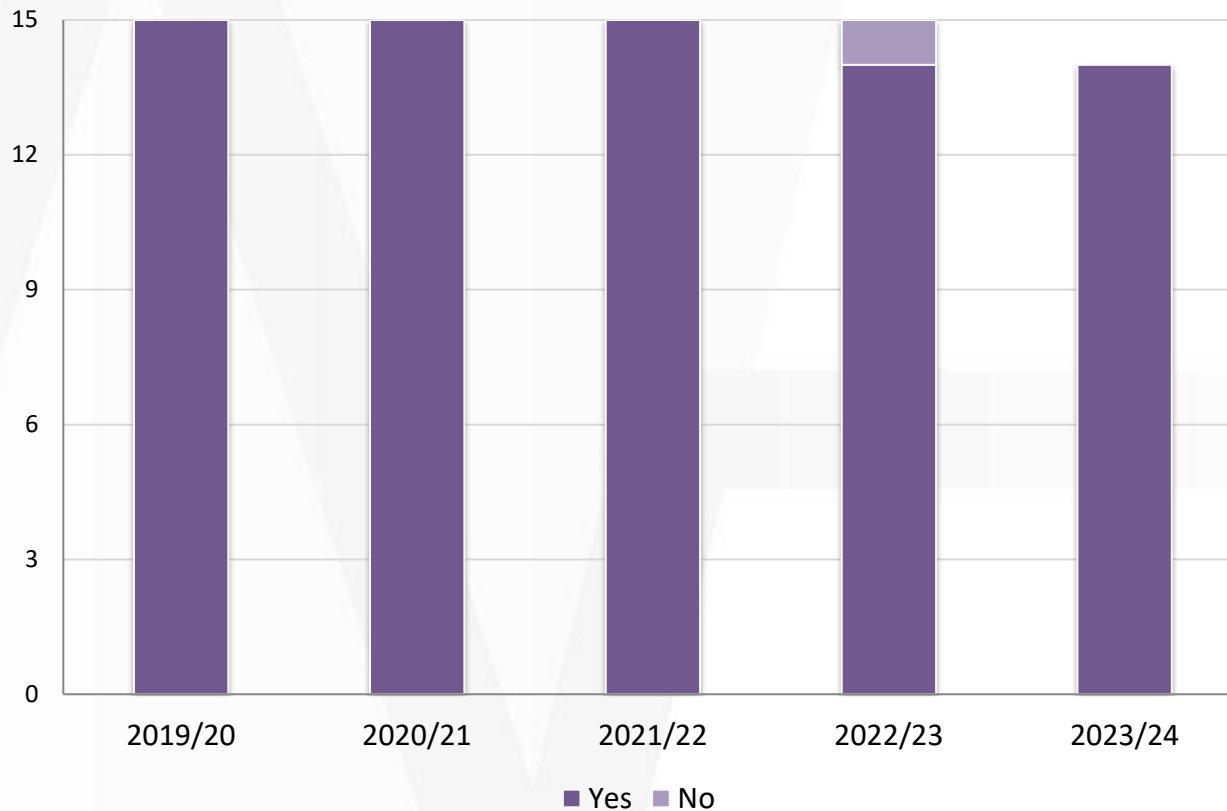
# Service Characteristics 2023/24

## Conference Calling



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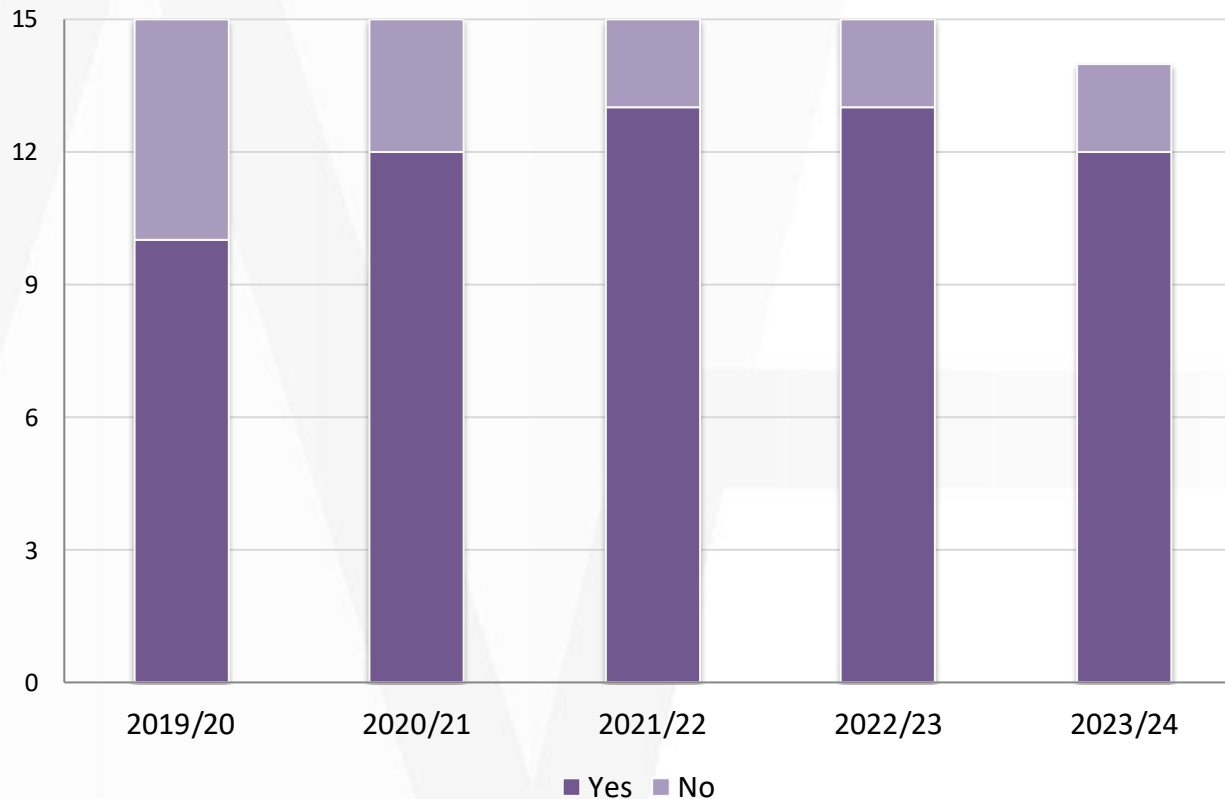
# Service Characteristics 2023/24

## Local network “wrong place” review



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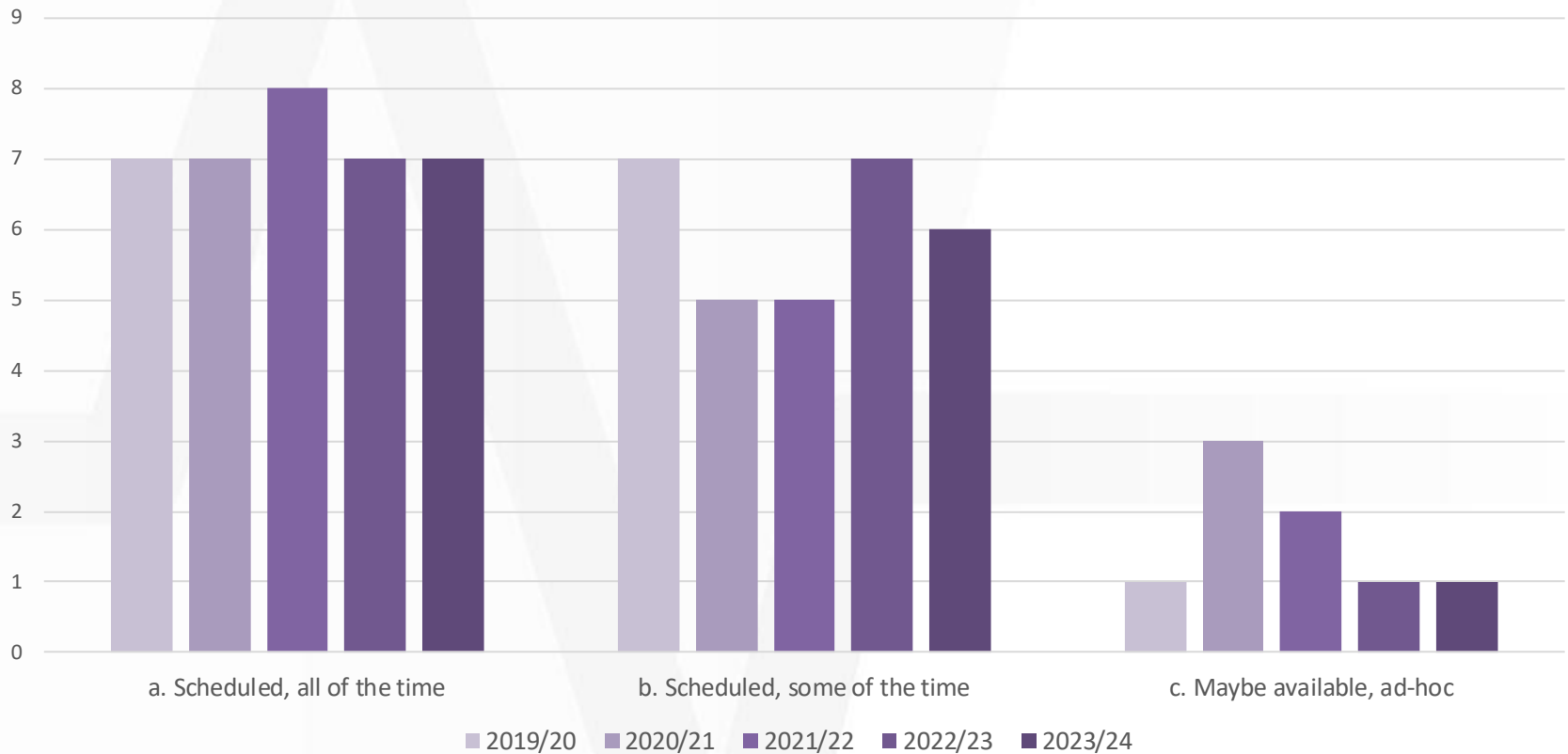
# Service Characteristics 2023/24

## Consultants on duty for neonatal transport



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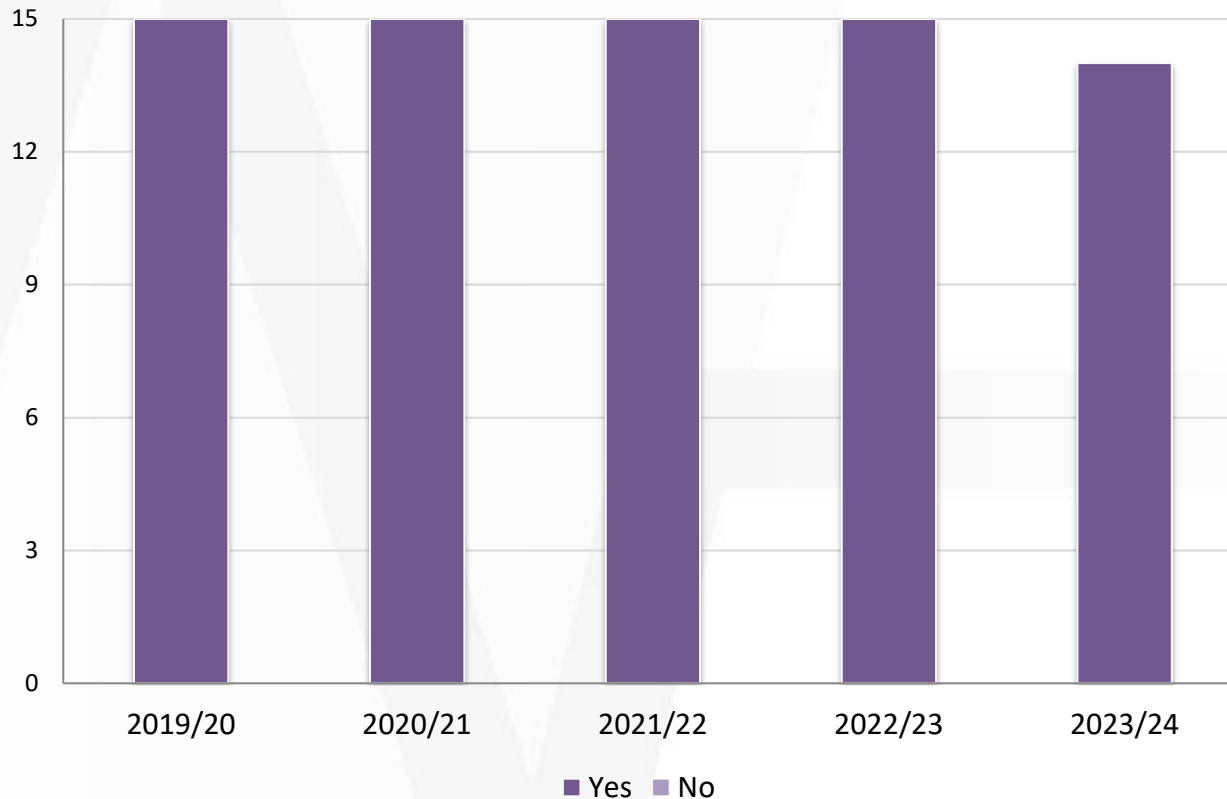
# Service Characteristics 2023/24

## Provide servo-controlled active cooling in transit



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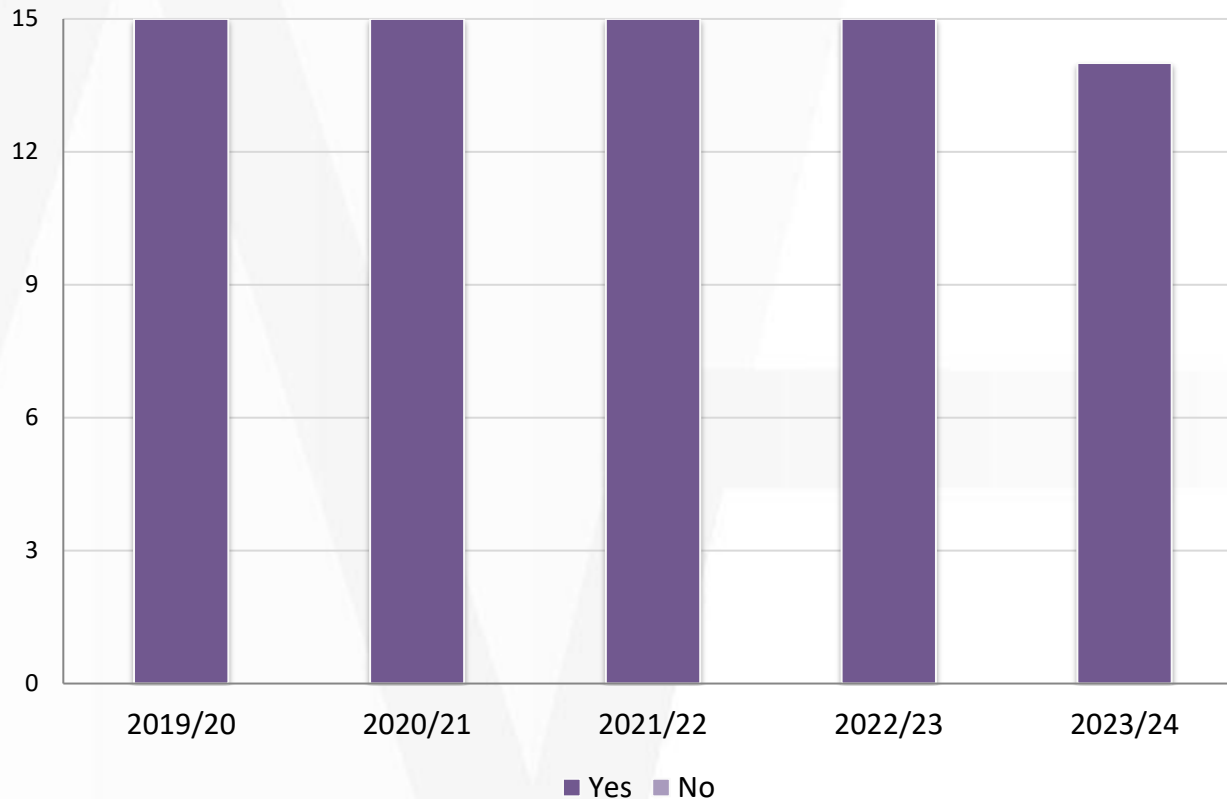
# Service Characteristics 2023/24

## Are you able to offer inhaled nitric oxide in transit?



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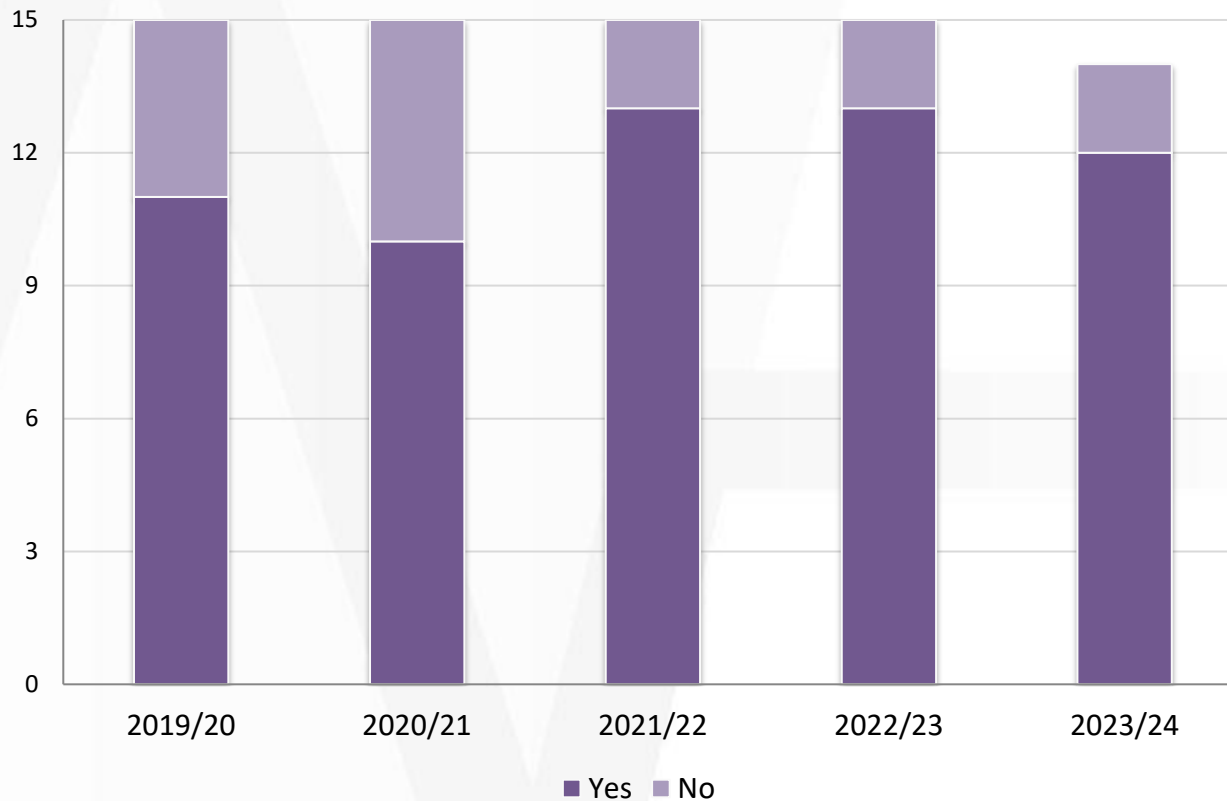
# Service Characteristics 2023/24

## HFO offered in Transit



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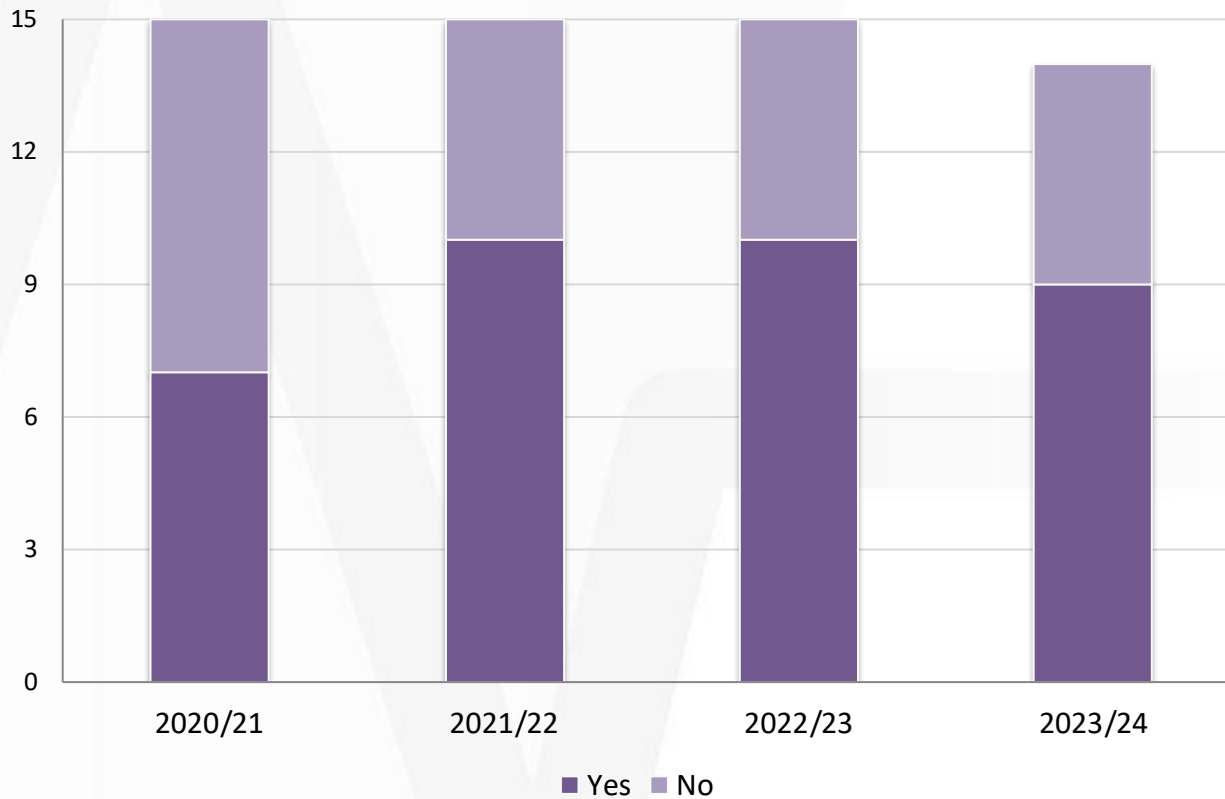
# Service Characteristics 2023/24

## Do you use a transcutaneous CO<sub>2</sub> monitor in transit?



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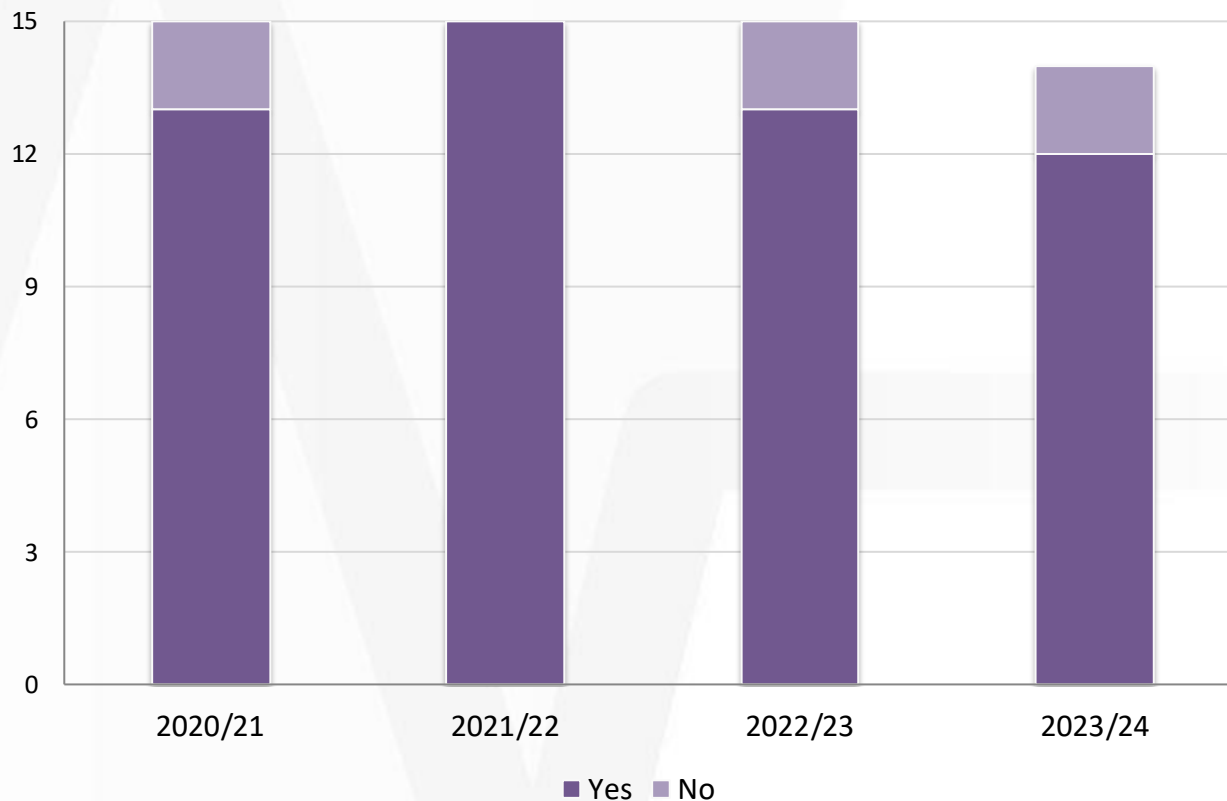
# Service Characteristics 2023/24

## Do you use ET CO<sub>2</sub> monitoring in transit?



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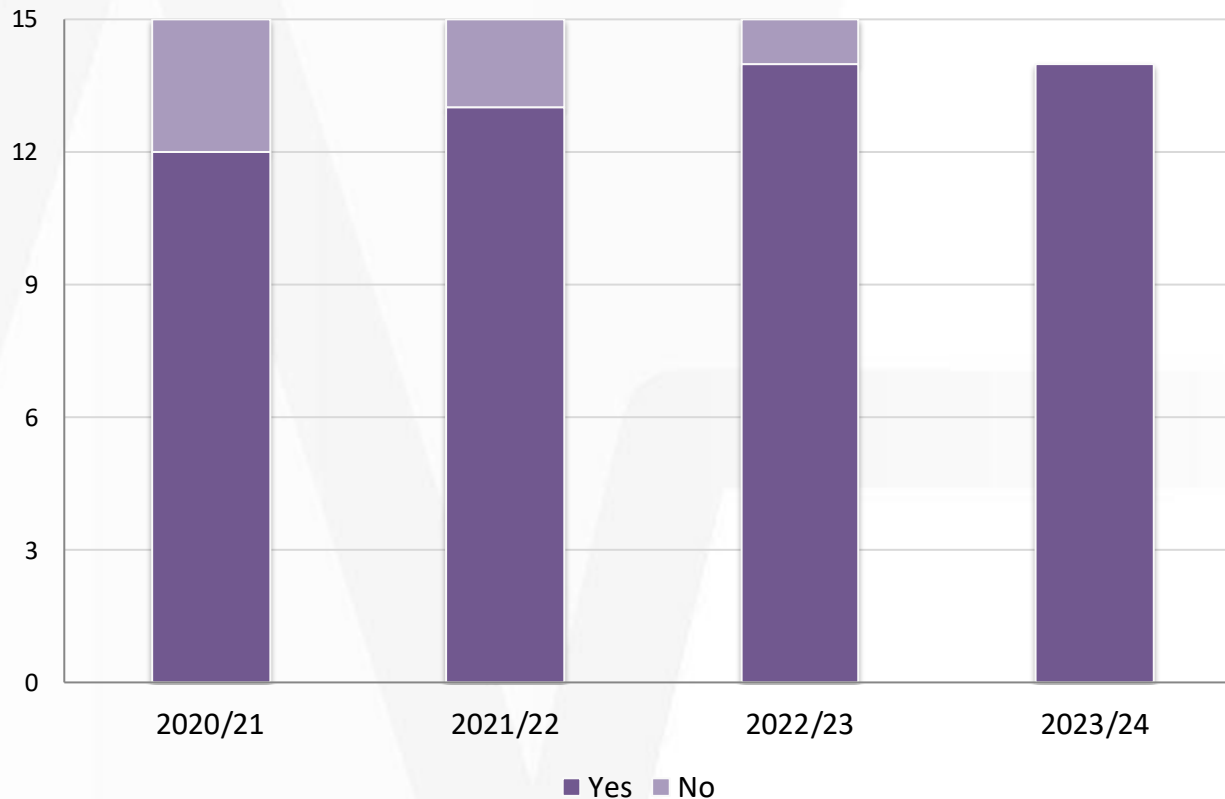
# Service Characteristics 2023/24

## Do you offer Volume Guarantee Ventilation in transit?



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# Service Characteristics 2023/24

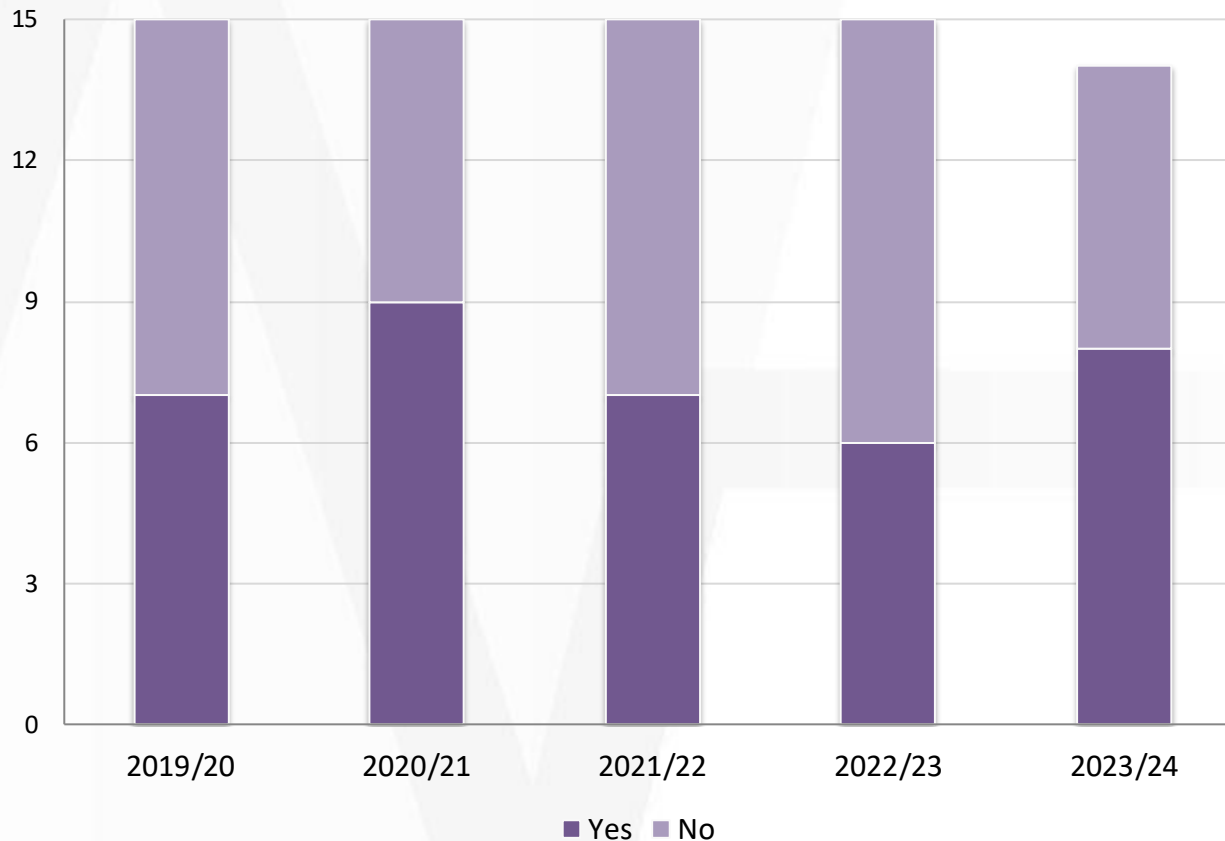


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## Infants referred with bile-stained vomiting/aspirates treated as immediate dispatch transfers ?



# Service Characteristics 2023/24

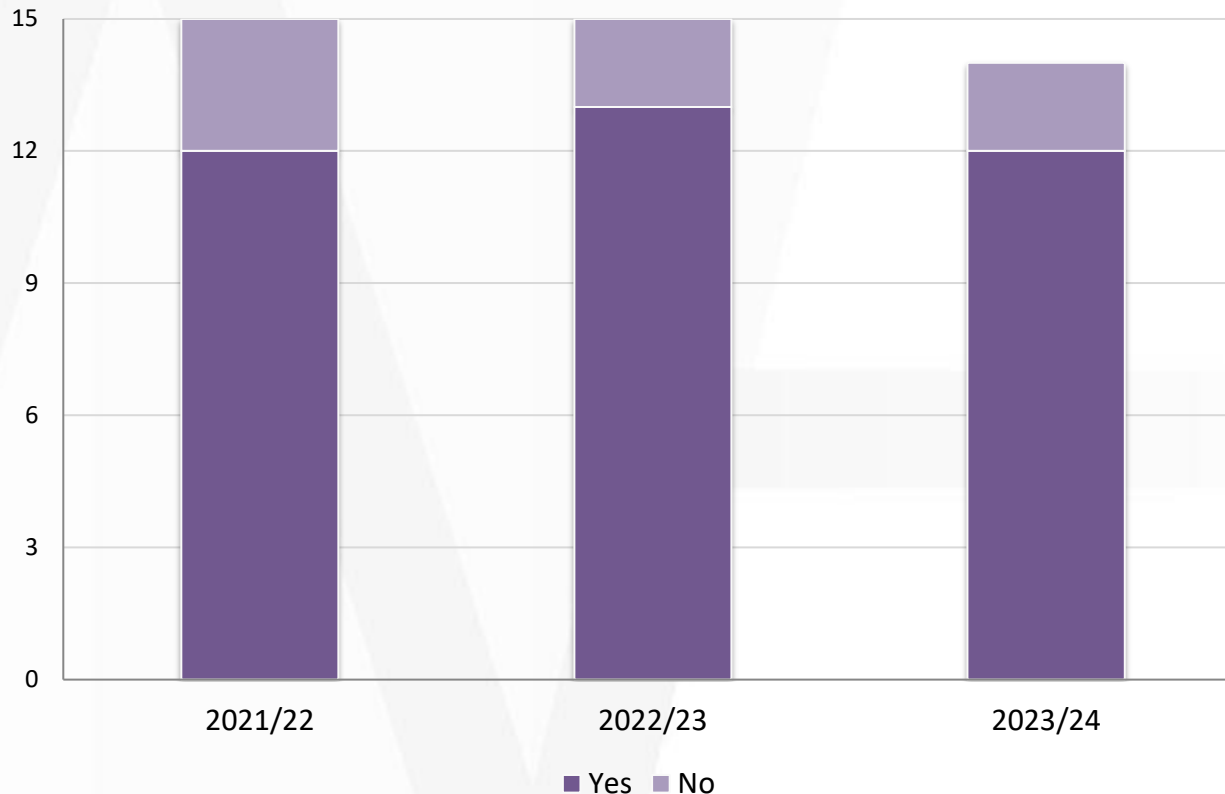


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## Do you have a system in place for collecting parental feedback?



# Conclusions/Trends 2023/24



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- More transfers
  - The number of transfers per 1000 deliveries continues to rise- the inevitable consequence of centralisation or a sign of system wide lack of capacity?
- More uniformity
  - Neonatal transport teams are increasingly similar

# Thanks



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- To all of the data collectors, analysers and submitters from all of the teams
- A huge thank you to Colin Devon, ScotSTAR data analyst who brings all of this together