# An Audit of Sweat Test Appointment Attendance in Relation to Ethnic Group and Quantity Not Sufficient Rates


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## Background

Sweat testing is an essential diagnostic tool used to quantify sweat chloride and plays a crucial role in confirming a diagnosis of Cystic Fibrosis (CF).

At Birmingham Children's hospital (BCH) the entire process is performed within the Clinical Biochemistry department (appointment booking, sweat sample collection, analysis, and result reporting). Unfortunately, the laboratory also observes a frequent occurrence for appointment non-attendance called 'Did Not Attend' (DNA).

Reducing (DNA) rates is a priority within NHS England's strategy to improve patient experience and address backlogs. The King's Fund also highlights DNA rates are disproportionately higher among populations experiencing health inequalities, including ethnic minority groups.

Audit standards:

1. There should be no difference in DNA rates across ethnic groups.

2. Quantity not sufficient (QNS) should not affect DNA rates.

3. UK National Guidelines for sweat testing: Failed sweat collections (insufficient weight or volume) should not exceed 10% of the tested population. <5% in children over 6 months and <20% in infants under 6 months.

## Aims

Main

- To examine possible differences in DNA rates for sweat test appointments across ethnic groups.
- To evaluate Quantity Not Sufficient (QNS) sample rates among different ethnic groups.

Secondary

- To identify patterns in attendance rates following a QNS result.
- To explore DNA trends across referring specialties and whether these vary by ethnicity

## Methods

Sweat test data between January 2023-August 2024 was gathered from the BCH laboratory information system (Telepath 2000) and review of electronic patient records (Epic) to obtain relevant appointment details were performed.

Details included appointment outcome (Attended/Did Not Attend), ethnicity (Asian, White, Black, Mixed, Other, Unknown), referring specialty, sweat test result (Sufficient/ QNS). Appointment follow-up outcomes after QNS result were also recorded. To assess the statistical significance, Chi-Square testing was performed with appropriate exclusions.

Laboratory staff fluent in non-English languages translated key sections of the patient information leaflet. These translations were compared with outputs from Google Translate to assess the accuracy and suitability of using automated tools to generate personalised, language-specific leaflets for electronic distribution via EPIC. Translation quality was evaluated across multiple languages to identify potential risks or misunderstandings.


## Audit findings

A total of 286 appointments (including multiple appointments for individual patients) were recorded over the 18-month period. The overall DNA rate was 17% (48/286) and 26% (74/286) of appointments resulted in a QNS result. The Unknown group was excluded from statistical analysis due to low observed frequency and limited use.

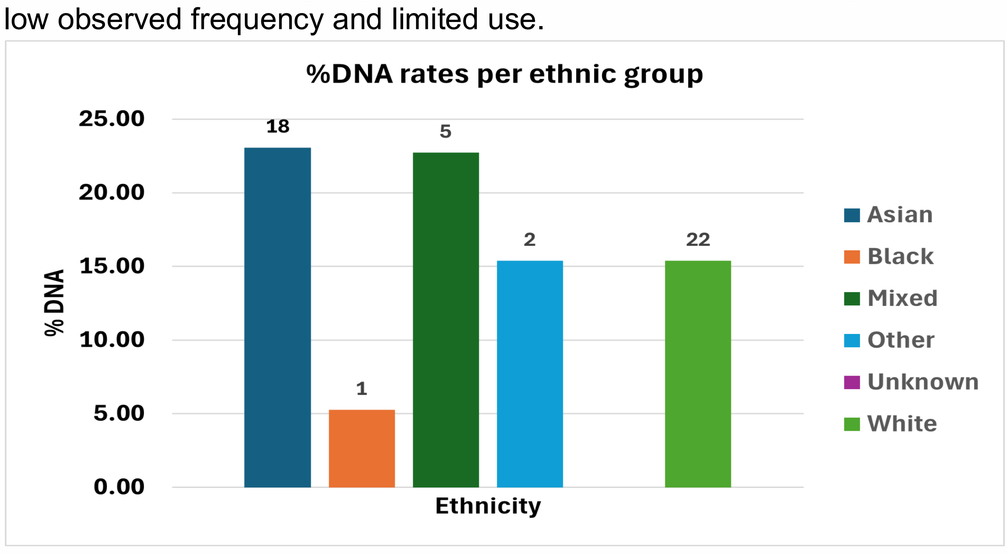



**Figure 1. DNA vs Ethnic groups**. Chi-square test showed no statistically significant difference in DNA across ethnic groups (p=0.34).

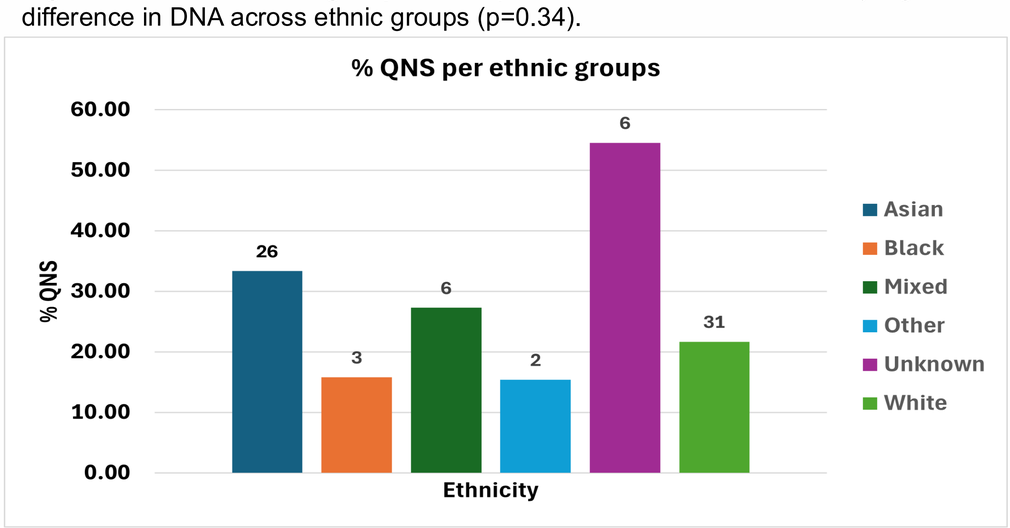



**Figure 2. Quantity Not Sufficient (QNS) collection outcomes vs Ethnic groups**. Chi-square test showed no statistically significant difference in QNS across ethnic groups (p=0.26)

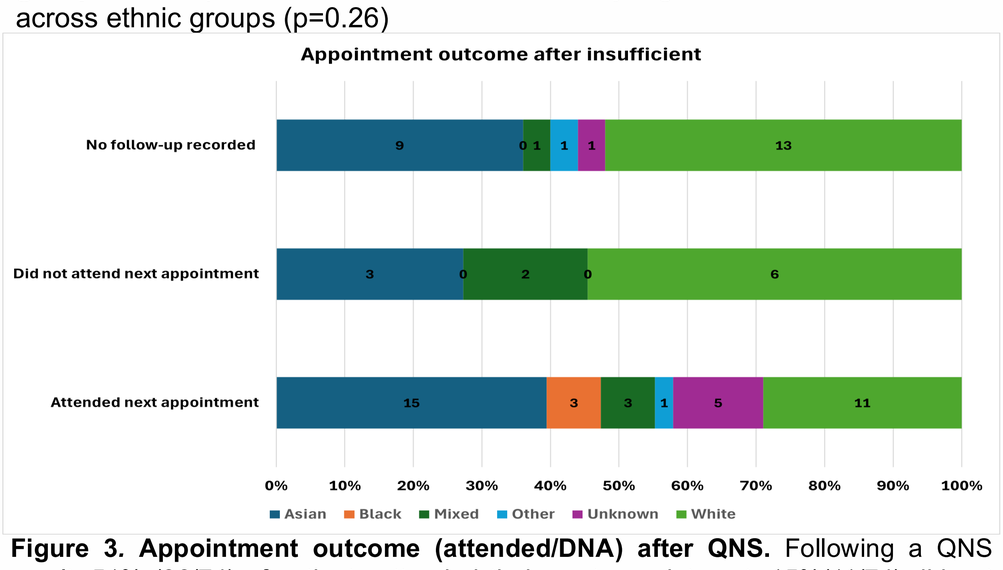



**Figure 3. Appointment outcome (attended/DNA) after QNS.** Following a QNS result, 51% (36/74) of patients attended their next appointment, 15%(11/74) did not attend and 34% (25/74) had no follow-up (of which 13/25 White and 9/25 Asian). Of the no follow-up patients, 2 had confirmed diagnosis of Cystic Fibrosis (1 White and 1 Mixed)

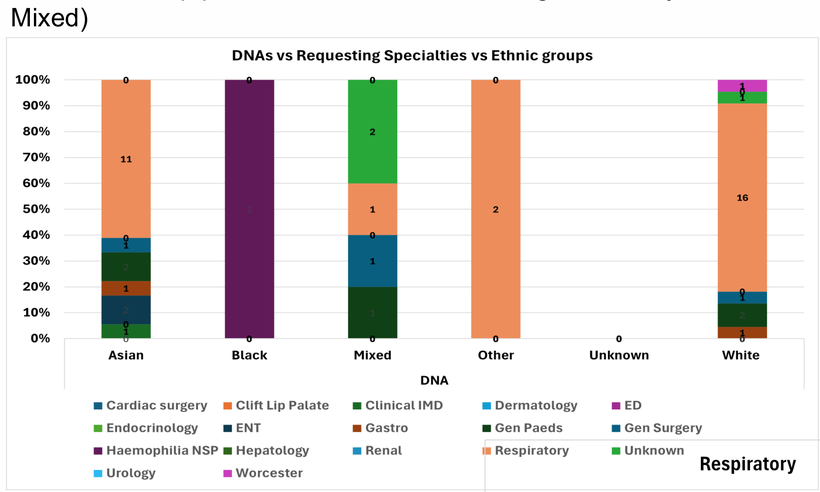
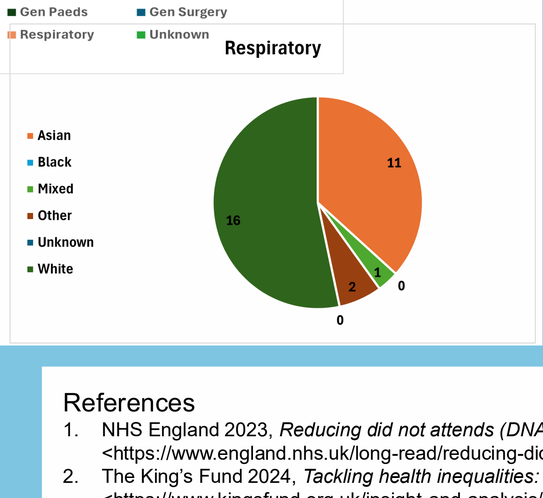



**Figure 4. DNA vs Referring Specialty vs Ethnic groups.**
Respiratory team referrals accounted for the largest proportion of DNAs (30/48 - 63%) with 16/30 from White and 11/30 from Asian patients.




## Audit findings cont.

Based on the leaflet translation exercise, we found that Google Translate provided accurate translations for most languages that we used (Arabic, Bengali, Hindi, Italian, Somali, Polish, Romanian), supporting its use for personalised patient leaflets. Chinese was the only one to show translation discrepancies that could lead to confusion and that may require additional review. Personalisation of patient information leaflets by language can be our next step.

## Discussion

There was notable variation in DNA and QNS rates across ethnic groups. However, the Chi-square test did not show this to be statistically significant, suggesting current departmental processes do not necessarily introduce inequitable outcomes.

Whilst statistical significance was not achieved, the trends observed still suggest possible underlying inequities in access, follow-up, and engagement with care.

Findings should be interpreted cautiously given the reduced statistical power of some groups because of low patient numbers. A UK-wide audit would improve data robustness.

This data shows that the Asian and Mixed groups recorded the most DNAs across this period which could suggest potential barriers to attendance that call for further exploration. Whilst the Unknown group did not record any DNAs, this was excluded for statistical analysis purposes. Patients in the Black group showed the fewest recorded DNAs.

The findings do not meet standards 1 and 3 of this audit. A difference in DNA rates across ethnic groups was observed as well as a greater than 10% QNS rate (26% overall). QNS did not seem to affect DNA rates. Standard 2 was met as only 15% (11/74) appointments were recorded as DNA after a QNS

Recommendations and action

Standard 1:

- Introduction of automated reminders at set intervals and/or text notifications via the new EPR system (EPIC). Re-audit DNA rates after implementation*.

*Electronic appointment booking has been implemented. Patients now have access to their appointment information via MyChart app, and an email is sent out with the appointment details. Automated reminder process to be checked.

- Tailor communication to patient needs where possible and necessary. This may include translated materials that contain unambiguous language.

Standard 3:

- Review our local sweat test collection process to understand why the QNS rate was so high during this period.


References

1. NHS England 2023, *Reducing did not attends (DNAs) in outpatient services*, NHS England, viewed 23 April 2026, <https://www.england.nhs.uk/long-read/reducing-did-not-attends-dnas-in-outpatient-services/
2. The King's Fund 2024, *Tackling health inequalities: seven priorities for the NHS*, The King's Fund, viewed 23 April 2026, <https://www.kingsfund.org.uk/insight-and-analysis/long-reads/tackling-health-inequalities-seven-priorities-nhs>
3. Association of Laboratory Medicine. (2014) *Guidelines for the Performance of the Sweat Test for the Investigation of Cystic Fibrosis in the UK.* 2nd Version.