Olfactory Dysfunction Audit 2024: A prospective snapshot audit of practice

Protocol version:	1.0
Date:	9th February 2024
Funding:	None declared
Project management team (alphabetical):	Edward Balai Shyam Gokani Ying Ki Lee Louis Luke Tharsika Myuran Ngan Hong Ta (Tanya Ta) Isabelle Williams Andrew Williamson
Executive oversight:	Professor Carl Philpott
Contact:	olfaction@entintegrate.co.uk

Table of Contents

1 Version History

Protocol version no.	Date	Version
1.0	09/02/2024	First draft as prepared by the Project Management Team for Executive Committee review

2 Table of acronyms

Acronym	Meaning
CRS	Chronic rhinosinusitis
ENT	Ear, Nose and Throat
PPOD-23	Position Paper on Olfactory Dysfunction 2023
UK	United Kingdom
PMT	Project Management Team
MRN	Medical Record Number
HRA	Health Research Authority

3 Project Summary

Study title	Olfactory Dysfunction Audit 2024: A prospective snapshot audit of practice
Short title	Olfactory Dysfunction Audit 2024
Study leads	INTEGRATE Rhinology subspecialty committee
Study design	Prospective multi-centre observational audit of practice
Study participants	Patients >18 years old Referred to the ENT clinic with olfactory dysfunction
Planned study period	1st May 2024 - 31st July 2024
Aim	To understand the epidemiology of olfactory dysfunction in the UK and the different diagnostic and therapeutic approaches used in secondary and tertiary care settings.
Objectives	1. Collect and report data relating to the epidemiology of olfactory dysfunction i.e. patient demographics, comorbidities, aetiology 2. Report the diagnostic approaches currently used for patients presenting with olfactory dysfunction 3. Report the therapeutic approaches currently used for patients presenting with olfactory dysfunction
Methods	- Identify patients presenting to the ENT outpatient clinic with olfactory dysfunction within the study period. - Central submission of anonymised patient data for pooled analysis.

4 Background

Olfactory dysfunction, manifesting as anosmia, parosmia, phantosmia, and/or taste disturbance, has a prevalence of approximately 22% in the general population [1]. Classification is based on aetiology, including post-infectious, traumatic, neurodegenerative, or secondary to sinonasal disease [2], with post-infectious olfactory dysfunction being notably most prevalent [2,3].

The sense of smell is integral to various aspects of daily life including taste, safety, sexual interaction and social communication [4]. Olfactory dysfunction can thus significantly affect an individual's quality of life, contributing to social isolation and mortality [5-8]. Moreover, several population studies have demonstrated that anosmia is an independent risk factor for reduced life span, and patients with olfactory dysfunction experience higher rates of depression (49%), anxiety (47%), eating disorders (95%), and relationship difficulties (59%) [9, 10].

The COVID-19 pandemic brought olfactory loss into the public domain as a primary symptom of the viral infection, and emphasised the need for greater awareness, routine testing, and effective treatments for smell and taste disorders [11, 12]. In addition, the Position Paper on Olfactory Dysfunction 2023 (PPOD-23), published in Rhinology in October 2023, proposes revised terminology and new recommendations for the diagnosis and management of olfactory dysfunction based on the current best available evidence [13]. Whilst on the frontline, ENT UK and the Fifth Sense charity together aim to improve education, awareness and encourage routine smell testing [11].

Despite this, standardised diagnostic and therapeutic pathways for olfactory dysfunction in the UK are lacking. Current guidelines recommend use of psychophysical smell testing, yet adherence to these guidelines within the UK and on an international scale is poor [2, 14]. Moreover, the role of advanced neuroimaging in the diagnosis, treatment, and prognostication of patients with olfactory dysfunction shows promise, yet remains to be integrated into routine clinical care [3]. Both olfactory training and topical steroids are evidence-based therapeutic options, however clinical practice varies widely, with patients generally struggling to access treatments and reporting feeling that their symptoms are underrecognized and undervalued [15].

A survey-based study by Damm et al performed in 2010 investigated the frequency of olfactory disorders, the diagnostic testing used and the approach to treatment across over 200 clinics in Germany, Austria and Switzerland[16]. This demonstrated variation in the psychophysical tests and objective tests available between countries, as well as differing preferences for therapies regardless of the underlying aetiology. Using a similar study design, we are aiming to carry out an assessment of current practice within ENT departments in the UK to enable identification of points of variation, the possible reasons for this, and the potential healthcare inequalities and differing outcomes this can lead to.

While a recently published international cross-sectional survey of ENT surgeons current practice in the assessment of olfaction had a high percentage of UK-based responses[14], a study

specifically investigating the approach to olfactory dysfunction in ENT clinics across the UK has not yet been performed. This protocol outlines a national prospective multi-centre observational audit of practice to understand the epidemiology, presentation, investigation and management of olfactory dysfunction within secondary and tertiary care ENT departments in the UK.

5 Aim and objectives

5.1 Aim

1. To understand the epidemiology of olfactory dysfunction presenting to the ENT clinic in the United Kingdom.

2. To evaluate the different diagnostic and therapeutic approaches used in ENT clinics in the United Kingdom

5.2 Objectives

1. Collect and report data relating to the epidemiology of olfactory disorders i.e. patient demographics, comorbidities, aetiology

2. Report the diagnostic approaches currently used for patients presenting with olfactory dysfunction

3. Report the therapeutic approaches currently used for patients presenting with olfactory dysfunction

6 Study design and setting

6.1 Study design

Prospective multi-centre observational audit of practice.

6.2 Study setting

UK secondary and tertiary care ENT departments investigating and treating patients with olfactory dysfunction.

7 Patient eligibility criteria

7.1 Inclusion criteria

- Patients who are 18 years and older
- New patients presenting to the ENT outpatient clinic with symptoms that include olfactory dysfunction of any cause

7.2 Exclusion criteria

- Patients who had their initial ENT outpatient clinic consultation prior to the start of the study period

8 Study procedures and methodology

8.1 Project registration

This is an investigator-led, non-commercial, non-interventional national audit of clinical practice. No patient identifiable information is collected by the Project Management Team and data analysis does not identify hospitals individually. As such, individual patient and centre participation is extremely low risk.

The project must be registered with the local Clinical Governance Department responsible for the conduct of local audit prior to submission of any data to the Project Management Team.

8.2 Patient identification

Local centres will obtain a list of patients for inclusion into the study.

These patients will:

- be >18 years old

AND

- have been referred to an ENT clinic with olfactory dysfunction of any cause

AND

- initially presented between 1st May 2024 and 31st July 2024

The clinic notes and investigation results data for these patients will be reviewed by the local team and full eligibility criteria applied. All eligible patients will be recorded on the Excel Data Tool. The number of screened patients and reasons for exclusions will be recorded.

8.3 Sampling time frame

8.3.1 Data collection window

8.3.1.1 Start date

The study launches on 1st May 2024.

8.3.1.2 End date

Final submission of data will be at the discretion of the PMT, with a provisional deadline on 30th August 2024, but with scope to extend to promote data completeness.

8.4 Consent

There will be no impact on the management of patients as a result of inclusion in the study. All data will be anonymised before submission, and no patients will be identifiable in any subsequent reports, presentations or publications. As such, consent from individual patients will not be required.

8.5 Anonymisation of patients

The Project Management Team (PMT) will not request or be provided the names, addresses, NHS numbers, medical record numbers (MRN) or identifiable dates for any patients. No study ID numbers will be generated for patients.

Dates of birth, investigations, diagnoses, treatments, and last follow-up will be used locally to generate durations. Durations (not dates) will then be submitted to the PMT.

Reporting and analysis will not identify individual cases in any subsequent reports, presentations or publications. Data flow will be one way, from the Data Disclosure to the Data Receiver (i.e. PMT). There will be no traceability from the PMT's database to local records.

If any identifiable data is received, the files will be deleted and the site will be informed.

8.6 Dataset

The full dataset is delineated in the study Excel Data Tool. This tool will collect data in the following areas:

- Demographic details
- Past medical history, drug history, family history
- Previous COVID-19 infection
- Previous head injury/trauma
- Clinic type
- Referral source
- Examination performed in clinic
- Type of olfactory disorder and aetiology
- Testing of olfaction performed i.e. subjective, psychophysical, objective
- Diagnostic imaging requested
- Treatments offered i.e. topical pharmacological, systemic pharmacological, non-pharmacological, surgical
- Clinic outcome

8.7 Data collection

Anonymised data will be locally entered into the Excel Data Tool spreadsheet in accordance with local governance guidelines. This uses restricted data fields and data validation to

improve data completeness and homogeneity. The Project Management Team will securely and confidentially combine datasets from each centre for the pooled analysis.

9 Data Management

9.1 Data collection tools and source document identification

9.1.1 Source documents

The Excel Data Tool will be used to collate study data. No new data will be generated for the patient record as a result of this study.

9.1.2 Excel Data Tool

Data will be read from source documentation (e.g. Electronic Patient Record) and entered onto a standardised Excel Data Tool, supplied to the participating sites by the Project Management Team. This tool has restricted data fields and data validation to improve data completeness and homogeneity. The completed Excel Data Tool allows data to be anonymised prior to secure submission to the Project Management Team. The tool is available to download from the project website available here: https://entintegrate.co.uk/olfactory-dysfunction-audit-2024.

9.1.3 Missing data

The Project Management Team will check the submitted data for completeness and integrity. If necessary, the Project Management Team will feedback to the local team where any data fields are inadequate. The submitting team will be asked to provide the missing data where possible. If data is not available, the data point will be treated as null, and that record will be excluded from any relevant analysis where necessary.

9.2 Data handling and record keeping

The anonymised Excel Data Tools will be submitted by each centre and received by the Project Management Team. The anonymised data from each local Excel Data Tool will be combined into a master national Excel Data Tool, with each update saved as a separate version and old versions retained. Anonymised data may be made available to applicants who submit a project proposal to the project management team, and which subsequently receives approval from the Project Management Team and INTEGRATE main committee.

10 Statistics and data analysis

This study is an audit of current practice which will be judged against pre-specified standards derived from the 2023 update of the European Position paper on olfactory dysfunction[1]. As such, detailing of specific 'endpoints' are not appropriate.

10.1 Sample size

The final sample size will be dependent on the number of centres submitting data. There is no *a priori* sample size estimation.

10.2 Pooled analysis

All cases will be entered into a pooled analysis. No individual centre will be identifiable from the analysis.

10.3 Sub-group analysis

Sub-group analysis will include, but not be limited to:

- Age
- Perceived aetiology
- Presence of concomitant sinonasal disease
- Patients managed in secondary care
- Patients managed in tertiary care/specialist dedicated olfactory dysfunction clinic

11 Ethical considerations

There will be no effect on the management of patients as a result of inclusion in the study. All data will be anonymised, and no patients will be identifiable in any subsequent reports, presentations or publications. As such, consent from individual patients will not be required.

This project has been determined to be an audit using the HRA decision tool available at http://www.hra-decisiontools.org.uk/research/. The output from this process is available in appendix 1. This should be discussed locally for study participation approval on request.

12 Authorship policy

12.1 Criteria for inclusion as a PubMed citable collaborator

Authorship will be in line with INTEGRATE policy on multi-centre collaborative projects. Each Centre will have a named Consultant Lead and a named Trainee Lead; they will be eligible for collaborative co-authorship of publications that result from the project.

12.2 Acknowledgements

All individuals contributing to data collection will be acknowledged in any subsequent presentations and publications.

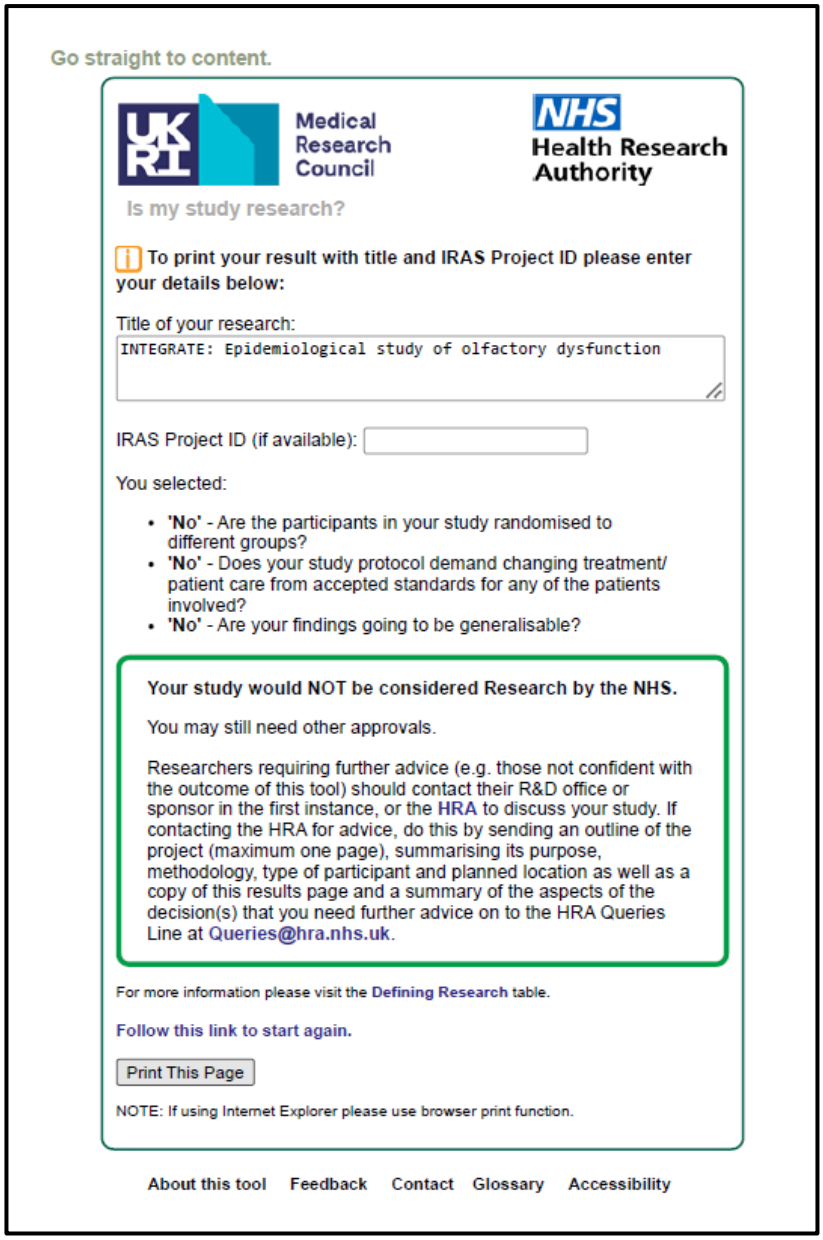
13 Funding

The Project Management Team has received no financial support for the research, authorship, and/or publication of this project.

14 References

1. Landis BN, Konnerth CG, Hummel T. A study on the frequency of olfactory dysfunction. Laryngoscope. 2004 [cited 2022 Mar 12]; 114(10):1764–9.
2. Hummel, T. *et al.* Position paper on olfactory dysfunction. *Rhinol. Suppl.* 54, 1–30 (2017).
3. Deems, D. A. *et al.* Smell and taste disorders, a study of 750 patients from the University of Pennsylvania Smell and Taste Center. *Arch. Otolaryngol. Head Neck Surg.* 117, 519–528 (1991).
4. Stevenson, R. J. An initial evaluation of the functions of human olfaction. *Chem. Senses* 35, 3–20 (2010).
5. Liu, B. *et al.* Relationship Between Poor Olfaction and Mortality Among Community-Dwelling Older Adults. *Ann. Intern. Med.* 170, 673–681 (2019).
6. Laudisio, A. *et al.* The Association of Olfactory Dysfunction, Frailty, and Mortality Is Mediated by Inflammation: Results from the InCHIANTI Study. *J. Immunol. Res.* 2019, 3128231 (2019).
7. Pinto, J. M., Wroblewski, K. E., Kern, D. W., Schumm, L. P. & McClintock, M. K. Olfactory Dysfunction Predicts 5-Year Mortality in Older Adults. *PLoS ONE* 9, e107541 (2014).
8. Van Regemorter, V. *et al.* Mechanisms Linking Olfactory Impairment and Risk of Mortality. *Front. Neurosci.* 14, 140 (2020).
9. Neuland, C., Bitter, T., Marschner, H., Gudziol, H. & Guntinas-Lichius, O. Health-related and specific olfaction-related quality of life in patients with chronic functional anosmia or severe hyposmia. *The Laryngoscope* 121, 867–872 (2011).
10. Miwa, T. *et al.* Impact of olfactory impairment on quality of life and disability. *Arch. Otolaryngol. Head Neck Surg.* 127, 497–503 (2001).
11. Fifth Sense and ENT UK announce a strategic partnership to improve care for people affected by smell and taste disorders. *Fifth Sense* https://www.fifthsense.org.uk/fifth-sense-and-ent-uk-announce-strategic-partnership/ (2023).
12. Welge-Luessen, A., Hummel, T., Stojan, T. & Wolfensberger, M. What is the correlation between ratings and measures of olfactory function in patients with olfactory loss? *Am. J. Rhinol.* 19, 567–571 (2005).
13. Whitcroft K.L., Altundag A., Balungwe P., *et al.* (2023) Position paper on olfactory dysfunction: 2023. *Rhinology*.
14. Whitcroft KL, Alobid I, Altundag A, Andrews P, Carrie S, Fahmy M, Fjaeldstad AW, Gane S, Hopkins C, Hsieh JW, Huart C, Hummel T, Konstantinidis I, Landis BN, Mori E, Mullol J, Philpott C, Poulios A, Vodička J, Ward VM. International clinical assessment of smell: An international, cross-sectional survey of current practice in the assessment of olfaction. Clin Otolaryngol. 2024 Mar;49(2):220-234.
15. Ball S, Boak D, Dixon J, Carrie S, Philpott CM. Barriers to effective health care for patients who have smell or taste disorders. Clin Otolaryngol. 2021 Nov;46(6):1213-1222.
16. Damm M, Schmitl L, Müller CA, Welge-Lüssen A, Hummel T. Diagnostik und Therapie von Riechstörungen [Diagnostics and treatment of olfactory dysfunction]. HNO. 2019 Apr;67(4):274-281.

15 Appendix 1



Go straight to content.

Medical Research Council

NHS Health Research Authority

Is my study research?

To print your result with title and IRAS Project ID please enter your details below:

Title of your research:

INTEGRATE: Epidemiological study of olfactory dysfunction

IRAS Project ID (if available):

You selected:

- **'No'** - Are the participants in your study randomised to different groups?
- **'No'** - Does your study protocol demand changing treatment/ patient care from accepted standards for any of the patients involved?
- **'No'** - Are your findings going to be generalisable?

Your study would NOT be considered Research by the NHS.

You may still need other approvals.

Researchers requiring further advice (e.g. those not confident with the outcome of this tool) should contact their R&D office or sponsor in the first instance, or the HRA to discuss your study. If contacting the HRA for advice, do this by sending an outline of the project (maximum one page), summarising its purpose, methodology, type of participant and planned location as well as a copy of this results page and a summary of the aspects of the decision(s) that you need further advice on to the HRA Queries Line at Queries@hra.nhs.uk.

For more information please visit the Defining Research table.

Follow this link to start again.

Print This Page

NOTE: If using Internet Explorer please use browser print function.

About this tool Feedback Contact Glossary Accessibility