

2026 Diploma in Orthodontic Therapy (DipOT) Course

Audit and Research Lecture

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on

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Aim & Objective of the Session

Aim:

To enhance understanding of audit and research in clinical practice and their relevance to professional development as an Orthodontic therapist

Objective:

To cover the syllabus learning outcomes related to audit and research, with an emphasis on their practical application and alignment



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Session outline



- 9am- Part 1. Audit lecture
- 10 am-Practical session on setting up an audit project
- 10:40am- B R E A K
- 11am- Part 2. Research lecture

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PART 1. AUDIT



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Audit lecture learning outcomes

By the end of this lecture, you will be able to:

- Understand key terminology
- Understand the stages of the audit process and the audit cycle
- Recognise and act in accordance with current best-practice guidelines, national and local clinical governance and health and safety requirements



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Key Terms

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Key terms

- Clinical governance
- Clinical audit
- Quality improvement project

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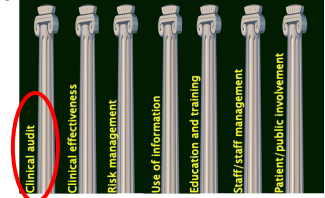
What is Clinical Governance?

Clinical governance is the system through which healthcare organisations are accountable for continuously improving the quality of their services and safeguarding high standards of care.

- A broad framework ensuring quality, accountability, and continuous improvement in healthcare.
- Encompasses multiple components, including audit.

Core Components:

- Clinical audit
- Clinical effectiveness
- Risk management
- Use of information
- Education and training
- Staffing and staff management
- Patient and public involvement



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A Clinical Audit is NOT:

✗ Research

It does **not** aim to generate new knowledge or test a hypothesis. Audit measures current care against established standards.

✗ Clinical Governance itself

It is a **tool within** clinical governance, not the entire framework.

✗ A Complaint Investigation

Audit is proactive and structured — not reactive like a complaint response.

✗ A One-Off Activity

Clinical audit involves a **cycle** — measuring, implementing change, and re-auditing.

✗ An Unstructured Opinion Survey

It requires **measurable criteria** and standards, not just feedback or subjective views.

✗ About Individual Performance Only

It focuses on **systems and processes**, not blaming individuals.

✗ Optional in NHS Practice

Audit is a **core requirement** for quality assurance and improvement in UK healthcare.

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Audit vs Quality Improvement Projects

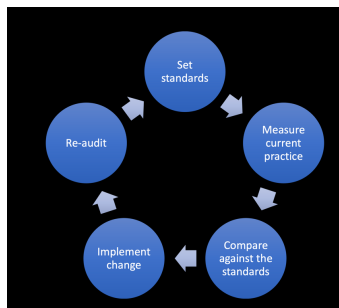
Key difference:

• Audit = "Are we following the rules?"

• QI = "How can we make this better?"

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The clinical audit cycle

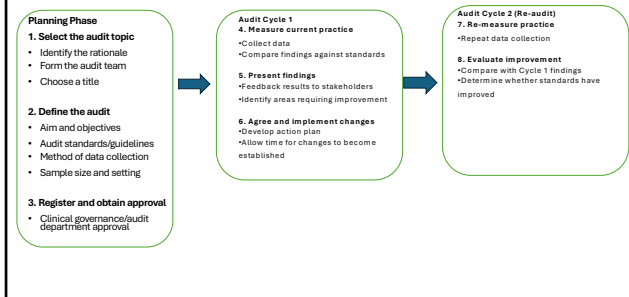


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How to conduct an audit project

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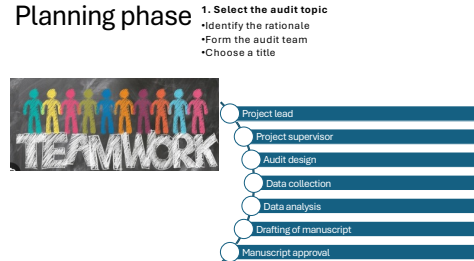
How to conduct an audit project



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How to conduct an audit project

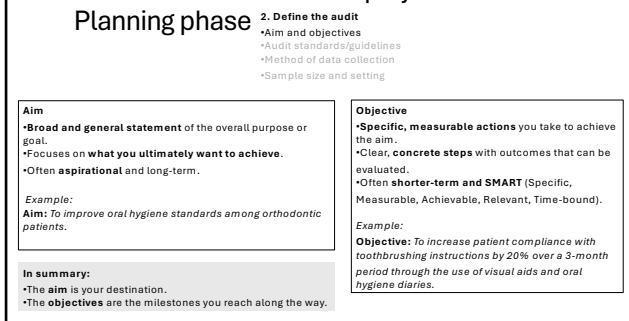
Planning phase



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How to conduct an audit project

Planning phase



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How to conduct an audit project

Planning phase



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SMART

Using the "SMART" acronym to set clear and effective **standards or objectives** against which performance can be measured

S - Specific

- The audit standard must clearly define **what** is being measured and **for whom**.
- It should be focused and unambiguous.

Example: "All orthodontic patients must have a documented treatment plan in their records."

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SMART

Using the "SMART" acronym to set clear and effective **standards or objectives** against which performance can be measured

M - Measurable

- The standard must be **quantifiable** so that compliance can be assessed objectively.
- Usually expressed as a percentage or frequency.

Example: "100% of patient records will include a signed consent form." 6 months."

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SMART

Using the "SMART" acronym to set clear and effective **standards or objectives** against which performance can be measured

A - Achievable

- The standard must be **realistic**, given available resources and current practice.
- It should stretch performance but still be possible to attain.

Example: "At least 95% of records will show evidence of hand hygiene compliance."

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SMART

Using the "SMART" acronym to set clear and effective **standards or objectives** against which performance can be measured

R - Relevant

- The standard should be **aligned with national guidelines, local policies, or patient safety priorities**.
- It must matter to clinical care and service improvement.

Example: Standards based on NICE or GDC guidance for safe practice.

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SMART

Using the "SMART" acronym to set clear and effective **standards or objectives** against which performance can be measured

T - Time-bound

- The standard or audit should have a **defined timeframe** for data collection and re-audit.
- This helps track progress and ensures timely quality improvement.

Example: "Audit cycle to be completed within 3 months, with a re-audit in 6 months."

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How to conduct an audit project

4) Define:

- the type of audit- first cycle? 2-cycle/re-audit?
- method for data collection – prospective? Retrospective?
- the sample (usually a minimum of 30)
- the site of data collection (single site? Multi-unit/multi-site? Hospital? Primary care? Local/regional/national?)
- data source (pt files? Direct observations? Digital database? Logbook?)
- data collection tool/proforma (checklist?)

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How to conduct an audit project: planning phase

3) Register and obtain approval

Clinical governance/audit department approval



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How to conduct an audit project: Audit cycle 1

4. Measure current practice

- Collect data
- Compare findings against standards
- The data collected represents current practice (what is currently being done)
- Compare current practice against the standards set for the audit
- This reveals which standards are being met and which are not

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How to conduct an audit project: Audit cycle 1

4. Measure current practice

- Collect data
- Compare findings against standards



Method of analysis of findings:

Descriptive Statistics (most common in audits)

Used to summarise and describe data.

- **Frequencies and percentages:**
 - e.g., "80% of patients had BPE scores recorded at the first visit."
- **Mean, median, mode:**
 - e.g., average time between referral and treatment start.
- **Range, standard deviation:**
 - e.g., to assess variation in waiting times or appointment durations.
- **Compliance rates:**
 - e.g., percentage of records with documented consent.

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How to conduct an audit project: Audit cycle 1

5. Present findings

- Feedback results to stakeholders
- Identify areas requiring improvement



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How to conduct an audit project: Audit cycle 1

6. Agree and implement changes

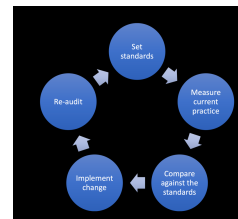
- Develop action plan
- Allow time for changes to become established



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How to conduct an audit project: Audit cycle 2 (Re-audit)

7) Re-measure practice (repeat data collection = cycle 2 findings)



The audit cycle

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How to conduct an audit project: Audit cycle 2 (Re-audit)

8) Evaluate improvement

- Compare with Cycle 1 findings
- Determine whether standards have improved

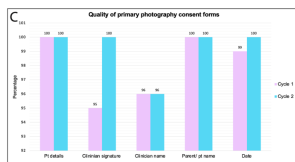


Figure 2C: Graphs demonstrating Cycle 1 and 2 findings: Quality of primary photography consent forms

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Current best-practice
guidelines, national and local
clinical governance and health
and safety requirements

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Summary table

Category	Details
Current Best-Practice Guidelines	• GDC Scope of Practice • BOS Clinical Guidelines • Delivering Better Oral Health Toolkit • NICE Guidelines (e.g., NG36)
Clinical Governance (National & Local)	• NHS Clinical Governance Framework • GDC Standards for Dental Team • CQC Requirements • Local Trust/Practice Policies
Health and Safety Requirements	• HSE Regulations • HTM 01-05 • COSHH • RIDDOR • IRMER 2017

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Clinical audits on maintaining accurate contemporaneous and comprehensive patient records in accordance with legal and statutory requirements and best practice

Example 1:

The quality of lateral cephalometric radiographs taken for orthodontic/orthognathic purposes at University Dental Hospital, Cardiff: A local 2-cycle audit

Example 2:

An assessment of BPE recordings within the Paediatric and Orthodontic departments at University Dental Hospital, Cardiff: First cycle

Example 3:

An assessment of BPE recordings within the Paediatric and Orthodontic departments at University Dental Hospital, Cardiff: A local two-cycle audit

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Useful online resources for clinical audit in Orthodontics

- The BOS Clinical Effectiveness Bulletin (online resource for BOS Members)
- How to guides for clinical audit:
<https://uhbristol.nhs.uk/for-clinicians/clinicalaudit/how-to-guides/>

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Questions



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PRACTICAL SESSION

Setting up an audit

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Practical session learning outcome addressed:

By the end of this practical session, you will gain experience with setting up an audit and be able to:

- Take responsibility for ensuring compliance with current best-practice guidelines
- Implement, perform, and manage effective decontamination and infection control procedures according to current guidelines

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What is research?

Research is a systematic and structured process used to investigate a specific question or problem, with the aim of generating new knowledge, validating existing theories, or challenging current understanding.

- **Systematic:** Follows a clear, step-by-step method (e.g. formulating a question, designing a study, collecting and analyzing data).
- **Original:** Seeks to produce new insights or findings not previously known.
- **Evidence-based:** Draws on data and rigorous analysis to draw conclusions.
- **Reproducible:** Should be detailed enough that others can repeat the study and test its findings.
- **Ethical:** Involves ethical approval when involving people or animals.

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Key Differences Between Audit and Research

Aspect	Audit	Research
Purpose	Assess current practice against standards	Generate new knowledge
Key Question	Are we doing things right?	What is the right thing to do?
Standards	Based on existing guidelines (e.g. NICE, GDC)	No pre-set standard; tests hypotheses
Data Collection	Uses existing records, often retrospective	Collects new data, often prospective
Intervention	No change to patient care	May involve treatment changes
Ethical Approval	Not usually required	Always required
Outcome Use	Improve local practice	Inform wider policy and practice
Generalisation	Context-specific	Aims for broad applicability
Publication	Not always published	Published in peer-reviewed journals

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Interactive: Is this an Audit or Research?

For each scenario, decide whether it's a clinical audit or a piece of research

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Scenario A:

An orthodontic department wants to evaluate if their new clear aligner system shortens treatment time compared to traditional braces.

They plan to split patients into 2 groups and measure outcomes.

Is this an audit or research?

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Scenario B:

A practice reviews 50 patient records to check if the orthodontic treatment consent forms were fully completed and signed.

They have a standard that 100% of charts should have a signed consent.

Is this an audit or research?

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Scenario C:

In your clinic, other dental professionals believe a certain bonding technique reduces bracket failures.

They want to try it on some patients and compare the failure rate to the old technique.

Is this an audit or research?

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GDC Expectations

- "Provide good quality care based on current evidence and authoritative guidance"
- Be able to:
 - Explain
 - Evaluate
 - Apply evidence-based principles to learning, clinical and professional decisions

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What is Evidence-Based Dentistry?

A systematic approach that integrates:

- 1. Best available research evidence
 - 2. Clinical expertise
 - 3. Patient values and preferences
- Promotes informed, high-quality, patient-centred care

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The 3 Pillars of Evidence-Based Practice

1. Best Research Evidence – From high-quality studies
2. Clinical Expertise – Skills, experience, and judgment
3. Patient Values – Goals, preferences, and circumstances

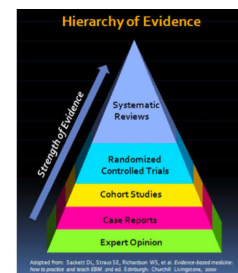


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1. Best Research Evidence

From highest to lowest:

- Systematic Reviews & Meta-analyses
- Randomised Controlled Trials
- Cohort and Case-Control Studies
- Case Reports
- Expert Opinion



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2. Clinical expertise



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3. Patient's values



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The 5 Steps of Evidence-Based Practice

1. Formulate a clinical question (PICO)
2. Finding the best Evidence
3. Critically appraising the evidence
4. Apply the Evidence
5. Evaluate the Outcome

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Example of PICO in Dentistry

- Clinical Question: Are electric toothbrushes better than manual?
 - P (population): Adults aged 18+? Children? People?
 - I (intervention): Electric toothbrush
 - C (comparison): Manual toothbrush
 - O (outcome) : Plaque & gingivitis outcomes

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Retrieving Evidence

Use reputable sources:

- Search of electronic databases (example Cochrane Library of systematic reviews, PubMed)
- National Guidelines (e.g. Delivering Better Oral Health)

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Critical Appraisal

- Ask:
 - Is the study design appropriate?
 - Is the sample size adequate?
 - Are outcomes valid and reliable?
 - Any biases?
 - Are results applicable to your patients?
- Can use checklists to appraise studies.



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Applying the Evidence

- Integrate research into patient care:
 - Use shared decision-making
 - Tailor to patient values and clinical context

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Evaluating the Outcome

- Monitor patient response:
 - Reflect and adjust practice
 - Stay updated with CPD

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Benefits of the evidence-based approach

- ✓ Improved outcomes
- ✓ Higher care quality
- ✓ Better decision-making
- ✓ Patient satisfaction
- ✓ Ethical and cost-effective care

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Limitations of the evidence-based approach

- ⚠ Limited or poor-quality evidence
- ⚠ Time/resource constraints
- ⚠ Applicability issues
- ⚠ Conflicting guidelines
- ⚠ Risk of over-reliance on evidence

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Reflection & Self-Directed Learning

- Critically evaluate sources
- Choose peer-reviewed CPD
- Reflect using learning logs
- Link learning to your PDP

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Summary

- EBD = Evidence + Expertise + Patient Values
- Apply structured decision-making
- Meets GDC C(B)1 and S2.1
- Enables safe, ethical orthodontic care

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Application of evidence-based approach

- To learning
- To clinical and professional practice
- To decision making.

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Application of evidence-based approach

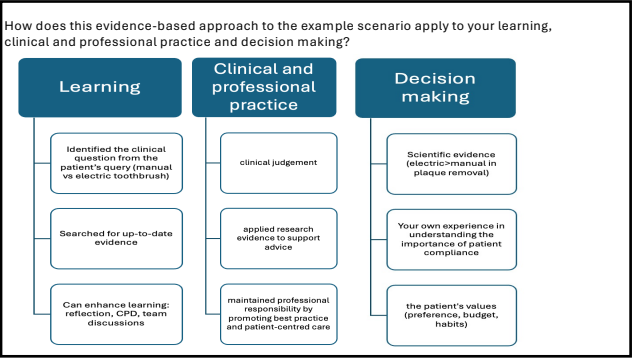
Example scenario:

A patient asks: "Should I buy an electric toothbrush, or is my manual one enough for good oral hygiene (OH) while wearing braces?"

Your Evidence-Based Response to the Patient:

- ✦ There's strong but not up-to-date evidence that electric toothbrushes, especially the ones with rotating and oscillating heads in both directions, are more effective at removing plaque and reducing gum disease.
- ✦ This is particularly important while you're wearing braces.
- ✦ More recent guidelines recommend electric toothbrushes for those with reduced control over their hands or at a high risk for plaque build-up, like children.
- ✦ If you're open to it, I'd recommend getting one but if you're using your manual toothbrush well with proper technique and consistency, that can still be effective. I can also show you how to improve your brushing with whichever type you choose."

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References

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