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AN INTRODUCTION TO MEDICAL AUDIT

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WHAT IS MEDICAL AUDIT?

According to National Institute for Clinical Excellence, medical audit is a **quality improvement procedure** aims to improve patient outcome and treatment by a systematic review of care in comparison to predetermined criteria and implementation of change. Selected aspects of the care's **structure**, **processes** and **outcome** will be systematically assessed against the predetermined standards. When necessary, adjustment is made at targeted person, group or service level and further monitoring is needed to ensure the improvement in healthcare delivery.

WHY DO WE NEED TO DO A MEDICAL AUDIT?

Medical audit is a proven methods to improve the quality of care. Medical audit helps in:

- Identifying and promoting best practice
- Improving patient care
- Providing details regarding service's level of quality
- Pointing out issues and offer assistance with remedies
- Enhancing communication and teamwork.

WHO SHOULD INVOLVE IN MEDICAL AUDIT?

An audit requires team work and involvement from policy maker to ensure the audit did not become a wastage. Selecting right team members is important to ensure that the audit process would run smoothly. All audit team members must be dedicated to the audit process and understand the method and purpose of conducting the audit.

WHAT IS THE DIFFERENCE BETWEEN RESEARCH AND MEDICAL AUDIT?

The goal of research is to produce **new knowledge** while audit is conducted to determine whether **a certain standard has been met by the service** provided.

Research	Audit
Generate new knowledge	Monitor and/or improve services
Defines best practices/standards	Benchmark against best practice/standards
Involves new intervention	Usually never involved new intervention
Well-defined selection criteria for participants	Recruitment representative of the patient target group
Potentially generalizable	Pertaining to local services
Ethics always required	Dependent on local governance

HOW ARE MEDICAL AUDITS CLASSIFIED?

Based on Donabedian et al, the following classification of audit is used for quality assurance.

- **Audit of structure**

Setting of care that being provided which include financial and other resources to human resources like the number of staff and skill level required as well as physical resources such as facilities and equipment.
Example: doctor/patient ratio, resource allocation, recording systems, collaboration within the practice and specialists, and practice management.

- **Audit of process**

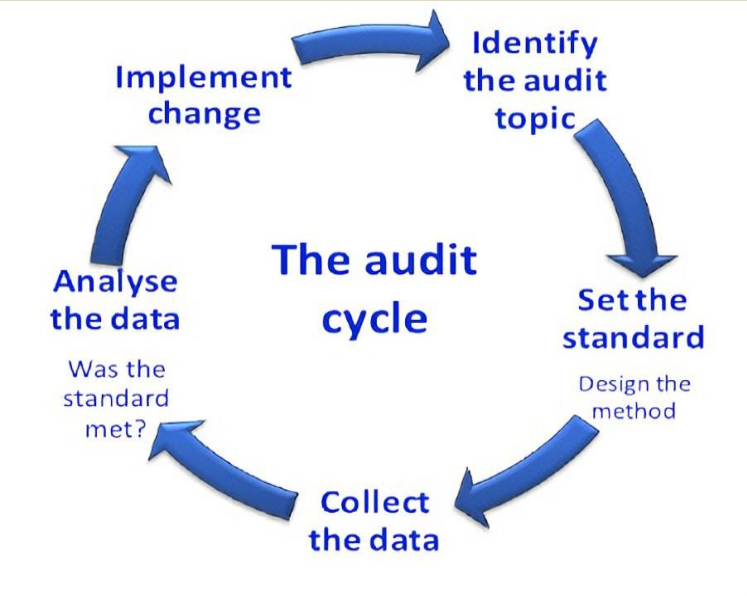
Audit of process denotes the action taken when providing and receiving care. It covers both the patient's activities in receiving and completing care as well as the practitioner activities in diagnosing disease and recommending treatment. The process can be broken into three categories: clinical performance, interpersonal performance and managerial performance.

- Audit of **outcome measures** are eventual results of the intervention and are the most relevant.

For example: audit on mortality after intervention with anti-hypertensive in stroke patient, reduction of lipid level after treatment of hyperlipidaemia and patient satisfaction after treatment.

AUDIT CYCLE

A medical audit can be viewed as a cycle in which different parts correspond to the assessment and improve the quality of a subject. Only by completion of the cycle, service quality can be assured.



HOW TO DO A MEDICAL AUDIT?

1. Choosing the topic

- Choosing an audit topic is the most important aspect of any audit activity. The topic should be **important** and **interesting**, otherwise, it would be difficult to maintain motivation.
- It is typically initiated following a complaint or perception that something is deficient in the practice or medical care. For example:
    - Complaint letter, incident report, direct observation

2. Agreeing on criteria

- Indicators, criteria, and standard of performance.
- A good **indicator** of care from a large number of elements that constitute the care.
- After the indicator is chosen, then we need to **define** it **precisely** so that we can say whether it is present or absent. Element defined precisely is referred to as **criteria**.
    For an example, assessing the quality of care related to providing hypertensive care involved many elements such as blood pressure recording, checking compliance, and checking cardiovascular risk factors.
- The chosen criteria must be both **reliable** and **valid**. A valid criterion must have a well-defined relationship to the quality and outcome of care and must be agreed upon by other members in the practice. A reliable criterion can be easily measured and with little disagreement.
    For an example, diastolic blood pressure levels equal to or below 90 mmHg (based on publication this level of blood pressure is associated with a decreased risk of stroke)

How do we get a reliable and valid criterion?
- Published research
- Clinical practiced guideline
- Professional and Expert opinion

The next step is setting a target level of performance.
- The target should be realistic
- Example in the case of blood pressure, achieving 100% of the target would not be feasible as there will be patient who is elderly and non-compliance with medication.
- Again, search for published researched/CPG/professional and expert opinion to look for a suitable target of performance.

3. Defining population

Usually, identify using registers- patient and staff. The target population is important for in determining sample size and data collection method.

4. Sampling

Two questions need to be addressed before selecting a sample.

1. How many samples size required?
2. How to select a representative sample?

There are a few determinants required to calculate sample size as below:

1. The degree of confidence wanted in the findings
2. Level of precision
3. Target performance
4. Number of population (proportion)
5. Resource constraints (time, access to data, costs)

Depending on the type of data being used, different methods can be used to determine sample size required. In audit, the sample size calculation is relatively straightforward. As such, it will be calculated using one or two proportion formula. (See example below:)

A primary care team is planned an audit of the treatment of hypertensive patients. They are treating 300 people for the illness, but they do not have time to go over all the documents. They choose one critical criterion and aim for a performance level of 70%. Those receiving therapy should have had their blood pressure measured and the result should have been below 150/90 mmHg on three occasions in the previous 12 months. They are prepared to accept a 5 percent sampling-related error. Based on the information given, the sample size required is 156.

It can be calculated using public domain software such as Epi Info or download the Excel file from University Bristol sample_size_calculator.xls (live.com). Example of calculation of sample size using the excel file as below:

to calculate sample size, amend variables in bold below		
N	**300**	population
p	**70%**	expected incidence
A	**0.05**	accuracy
c	**1.96**	c = 1.96 for 95% confidence, or 1.645 for 90% confidence
formula result =	155.47	
therefore n=	**156**	

Sampling techniques can be very basic to extremely sophisticated. To reduce the chance of selection bias, random sampling should be employed whenever possible.

Simple random sampling: Cases are chosen fully at random, ensuring that every case has an equal chance of being chosen. This can be done, for example, by utilising a computerised random number list or by selecting numbers at random from a sealed container or envelope.

Systematic random sampling: After placing the cases in sequence, a random number is then chosen to represent the first case. The remaining cases are then chosen at predetermined intervals, such as every third or fifth patient.

5. Collecting data

- Data can be collected via retrospective and prospective approach. There are advantages and disadvantages to each method and that largely depends on the chosen topic.

- Retrospective data collection is a good option if the material is well documented and comes from a reliable resource. While prospective data would be a better option if the information needed is not typically collected in usual practices. However, this calls for more resources such as time and manpower.

6. Analysing data and evaluating information

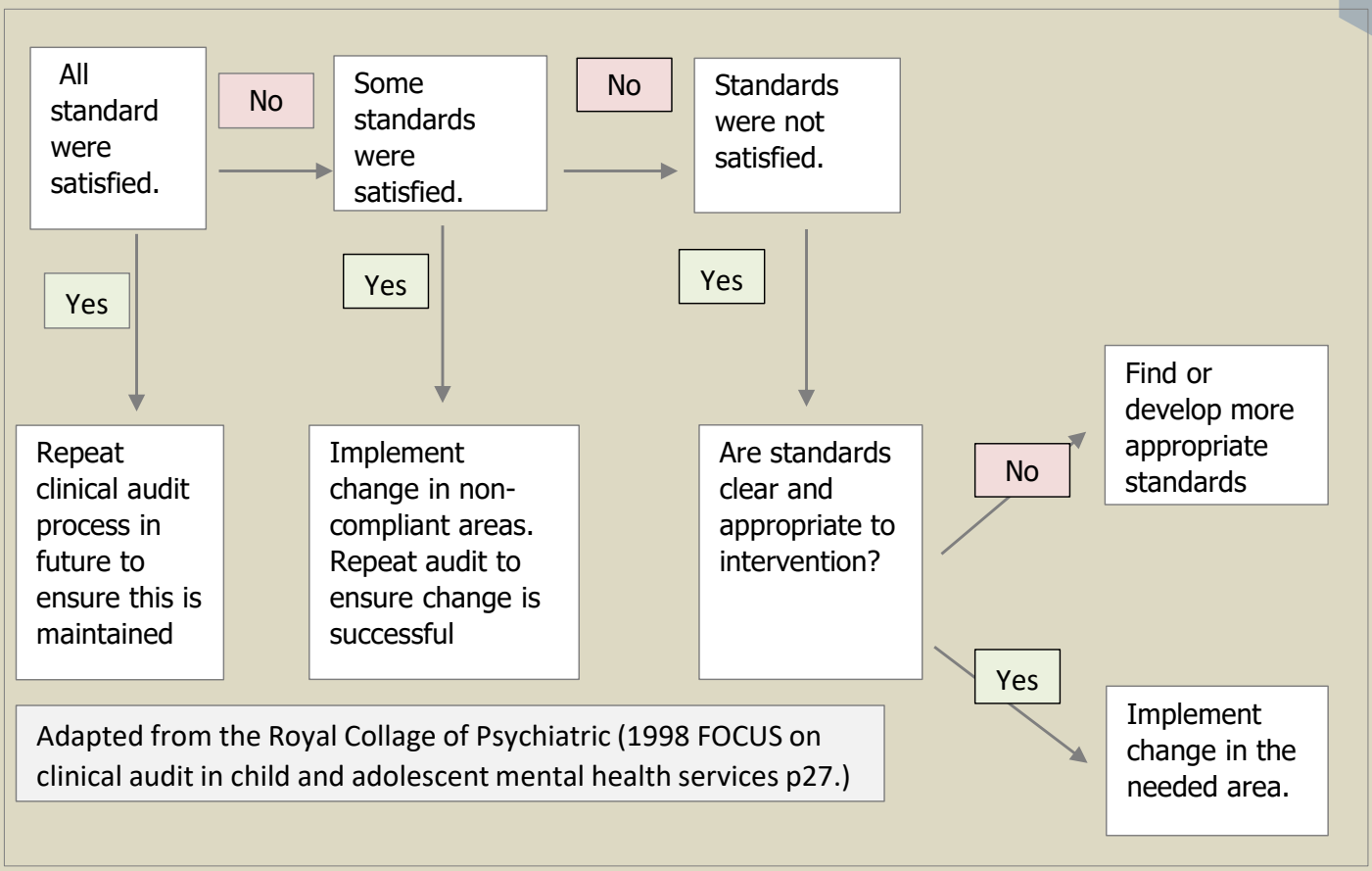
- The analysis can range from simple descriptive statistic to complex statistical method. However, on most occasion a simple and easy to understood method is preferred. Indeed, if the result require implementation the analysis must be simple enough for everyone involved in the care process able to comprehend.

7. Implementing change

- The most difficult process in audit is to implement changes. Implementation of changes after agreeing with recommendation and action is needed to improve quality of care. Without action to improve, the audit will have no tangible results unless the result demonstrates that the standard we targeting is achieved.

8. Close the loop – Re-audit

- Making decisions on when and how to re-audit is the last step in the clinical audit process. To show that revisions or implementation have met the desired criteria, it is crucial to repeat the audit cycle.
- Diagram below shows the appropriate step on when to implement the changes and to re-audit.



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3/ Donabedian A. Criteria and standards for quality assessment and monitoring. Quality Review Bulletin 1986