5. Introduction To Quality Improvement Methods

Objectives:

- Describe The Basic Principles Of Quality Improvement.
- Identify The Methods And Tools For Improving The Quality Of Health Care.
- Conclude The Opportunities For Using Safety Science To Analyze Errors.
- Appreciate The Range Of Improvement Methods Available For Reducing Harm To Patients.
- Identify The Components Of Quality Improvement Mode (PDSA Cycle).

Important | **Doctors' notes** | **Extra** | *New terminology*

Editing file | **Feedback form** | Lecture Handouts 📄 + 📄

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Quality Management

- purpose of Quality improvement methods
- THE Science of Improvement
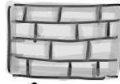
① outcome measures

Ultimate goal of HealtHCaRe

② process measures

delivery of clinical service to patients

↳ Clinical Guidelines

③ STRUCTURE measures

- Health care provide
- organization
- Facility

CHANGE CONCEPTS

① Eliminate Waste

② improve Work overflow

③ cHange work environment
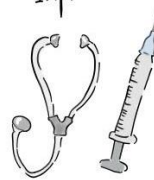
④ enHance Relationship
Health Care provider — patient
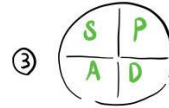
⑤ Manage time

⑥ Avoid mistakes

Continous Improvement meTHods

① Clinical PRactice Improvement

② Root Cause analysis

③ S P A D — PLAN-DO-Study-Act Cycle

Quality Improvement Tools

PARETO CHART   RUN CHART

The Purpose Of Quality Improvement Methods

- **Identify a problem.** (through brain storming, literature, and data collection..etc.)

- **Measure the problem;** (you can't improve what you can't measure)

- **Develop a range of interventions designed to fix the problem.** (In team conferences)

- **Test whether the interventions worked** (compare before & after)

Example: let's say your weight is 95 kg, so you look at **what caused** you to gain weight (eating fast food for example), and how did you **measure** that? With the BMI which showed you are obese. (Weight is indicator and BMI is benchmark). Next is the **intervention** (how are you going to fix it?) you'll start a diet. Then finally to **test** if it worked you weigh yourself again and see if your weight has decreases (it worked) or increased (it didn't work)

The Science Of Improvement

The role of measurement in improvement: Read it

- Measurement (collect and analyze data)is an essential component of quality Improvement.

- There is strong evidence to show that when people use the appropriate measures to measure change, significant improvements can be made.

- All quality improvement methods rely on measurement

  Data vs. Information, Data is raw, while information carries meaning (analyzed data)

# 1. Describe The Basic Principles Of Quality Improvement.

The Science Of Improvement

Three main types of measures or indicators:

Everything is a system, every system has: 1-Input (structure) 2-Process (the Interaction) 3-Output (Outcome)

1. Outcomes* Measures:	2. Processes* Measures:	3. Structure* Measures:
- Represent the **ultimate goal** of healthcare - Example: - The 30-day mortality rate (الوفيات) - Pressure ulcer - Morbidity مضاعفات - Sentinel events - Revisit to ER after 48 hours - Medication error *نتيجة الشغل اللي يسوونه في المستشفى	- Represent **the delivery of specific clinical services to patients,** are often based upon clinical guidelines. - Example: - The percentage of patients hospitalized for myocardial infarction who are treated with a beta blocker at the time of discharge, - Bed occupancy - Average length of stay - OR cancellation - Nursing to patient ratio - Absentism *Process → operational (daily work) العمل حق المستشفى "شيء أشتغله حاليا"	- أعداد وأرقام - Represent the **characteristics** of individual healthcare providers, organizations, and **facilities**. - Example: - Nursing ratio in the ICU - Equipment, - Number of consultants *بس رقم ما يعكس لي شيء(ما أعرف إذا هو كافي أو لا) .مثلا لو قلت المستشفى فيه 6,000 موظف ممكن تفكر إنه شيء رائع لكن إذا قارناه بعدد المرضى اللي يجون مثلا 40,000 لا.. هنا يصير العدد قليل ومو كافي <u>Note</u>: number of beds → structure Bed occupancy → process Bed occupancy is how many beds are occupied by patients اذا كان رقم عالي يعني المرضى عندك كثير

> **The definitions and examples are <u>important</u>!**
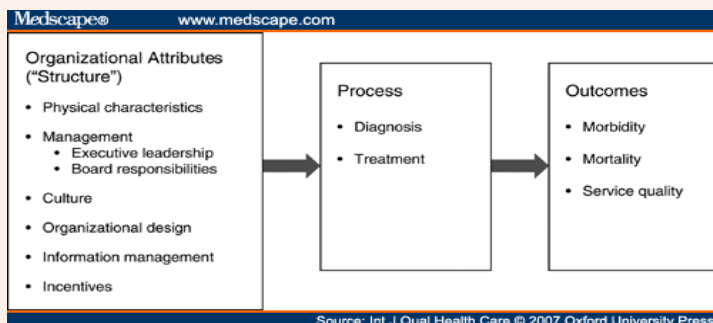
Change Concepts <u>Read it</u>

Aims to improve:

- A general idea, with proven merit and sound scientific or logical foundation, that can stimulate specific ideas for changes that lead to improvement.

- Asking what changes can be made to improve a particular situation

- Example: improved study habits, tension with a family member, a teacher or difficulties at work

The following nine general categories:

1. Eliminate waste

(ركزوا على العنوان والكلام اللي تحته)

Look for ways of eliminating any activity or resource in the hospital or clinic that does not add value to patient care.

2. Improve workflow

Improving the flow of work in processes is an important way to improve the quality of patient care delivered by those processes..(e.g. Architecture, Floor plan)

3. Change the work environment

Changing the work environment itself can be a high-leverage opportunity for making all other process changes more effective.

4. Enhance the health provider/patient relationship

To benefit from improvements in quality and safety of health care, the health-care professionals and patients must recognize and appreciate the improvements. (Build trust, admit fault)

5. Manage time

An organization can get more achieved by reducing the time to deliver health care, develop new ways of delivering health care, reducing waiting times for services and cycle times for all services and functions in the organization.

6. Design systems to avoid mistakes

Organizations can reduce errors by redesigning the system to ensure that there is redundancy i.e. multiple checks and balances to combat human error. (e.g. ATM requires taking the card before withdrawing money, to stop clients from forgetting their cards)

Continuous Improvement Methods

There are a number of examples of quality improvement methods in health care but the two most relevant to medical setting are:
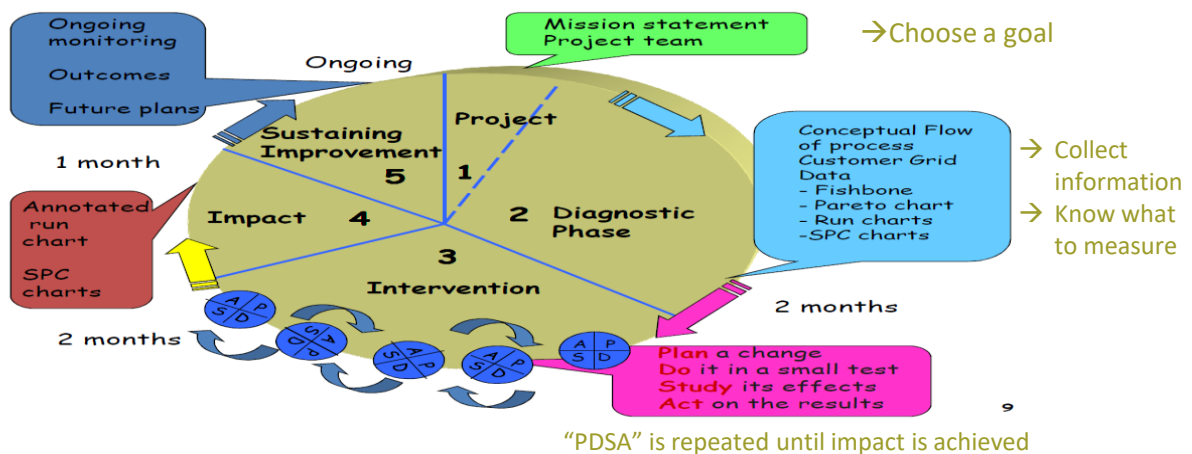
1. *Clinical practice improvement (CPI) methodology*

2. *Root cause analysis (RCA).*

3. *Plan-Do-Study-Act cycle*

1. *Clinical practice improvement (CPI) methodology* for your info

Sustainability = الاستمرارية

Monitoring because quality is endless

Assess effect ←

Ongoing monitoring
Outcomes
Future plans

Ongoing

Project

Mission statement Project team

→Choose a goal

Sustaining Improvement
5 1

Impact 4

1 month

Annotated run chart
SPC charts

2 Diagnostic Phase

3
Intervention

Conceptual Flow of process
Customer Grid Data
- Fishbone
- Pareto chart
- Run charts
- SPC charts

→ Collect information
→ Know what to measure

2 months

2 months

Plan a change
Do it in a small test
Study its effects
Act on the results

9

"PDSA" is repeated until impact is achieved

2. Improvement Model- Root Cause Analysis (RCA) ركّزوا عليه

Same as fish bone analysis but they differ in the presentation.

يعني شيء تحت مو ظاهر زي جذر الشجرة المتشعّب (Digging for the cause)
كلها عشان نحدد ايش المشكلة ونحط الأسباب.

Is a defined process that seeks to explore all of the possible factors associated with an incident by asking what happened, why it occurred and what can be done to prevent it from happening again.

An effective root cause analysis requires the following components:

1. Multidisciplinary team

2. Root cause analysis effort is directed towards finding out what happened:

- Documentation and review (medical records, incident forms, hospitals guidelines, literature review;

- Site visit—to examine the equipment, the surroundings and observe the relationships of the relevant staff. نفس ما قلنا نعرف ايش المشكلة هل هي بالستاف؟ بالسيستم؟ يجلسون تيّم مع بعض و يحددون.

3. Event flowchart "جذور الشجرة" is a key part of the investigation as it:

- Helps to form a common understanding of what happened;

- Allows the team to develop problem statements

ركزوا على المفهوم فقط:

4. The team develops a problem statement

5. Establishing the contributing factors or root causes are accomplished **through:**

- A brainstorming process of all possible factors: مثل لما يكون عندنا خطأ بصرف الأدوية نقوم نحط كل هذي الفاكتورز ونحدد الأسباب اللي تخصّها

  - Environmental factors: e.g. The work environment; medico-legal issues; Air conditioning.

  - Organizational factors: e.g. Staffing levels; policies; workload and fatigue;

  - Team staff factors: e.g. Supervision of junior staff; availability of senior doctors;

  - Individual staff factors: e.g. Level of knowledge or experience;

  - Task factors: e.g. Existence of clear protocols and guidelines;

  - Patient factors: e.g. Distressed patients; communication and cultural barriers between patients and staff; multiple co-morbidities.

3. Improvement Model- (Plan-do-study-act Cycle)

Previously called Plan-Do-Check-Act

بلان: إني أنا أخطط ايش أسوي للتحسين، دو: أبدا أسوي الخطة إلي خططتها مثل لما أسوي دايت و أقرر أسوي رياضة و اقلل اكل. ستدي: لما اقيس وزني مرة ثانية و اشوف اللي سويته صح أو خطأ. آكت: فعلين يا إما أصير أقيس وزني بشكل مستمر عشان أنا نحفت أو اني ارجع مرة ثانية للسايكل و اشوف خطة ثانية.

ركزوا على المفهوم أكثر من الأسئلة

▪ Three fundamental questions, which can be addressed in any order. The questions are:

1. What are we trying to accomplish? Plan

It is important that the team agrees that a problem exists and that it is worthwhile fixing.

2. How will we know whether a change is an improvement? لما أرجع أقيس أشوف نفع أولا. Study

An improvement can only be confirmed when the measures show things were improved over time.

3. What changes can we make that will result in an improvement? Do

the team testing the different interventions used to make the improvements.

▪ **The PDSA cycle**

to test and implement changes in real work settings—the PDSA cycle guides the test of a change to determine if the change is an improvement.
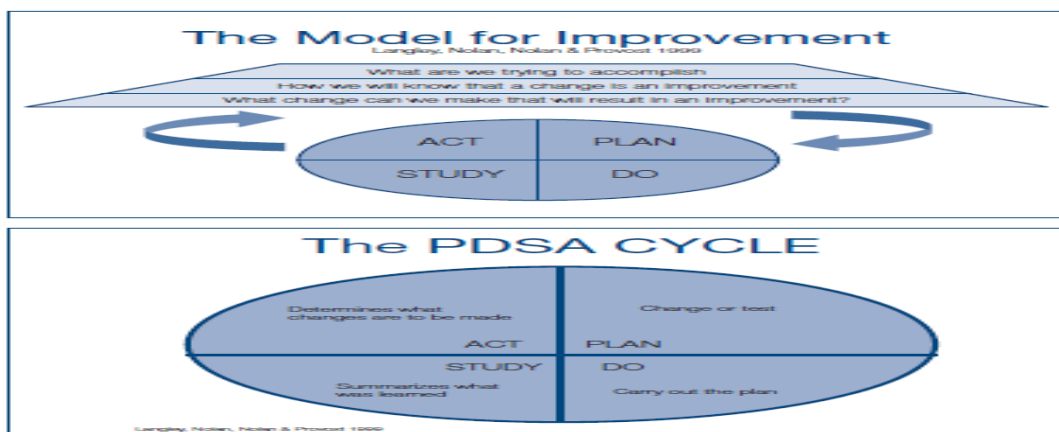
Quality Improvement Tools

استخدمها عشان أقيس و أشوف فيه تحسّن أو لا يعني هي الرسم البياني (بريزينتيشن للي صار بعد التحسن "هل قلّت نسبة الخطأ بعد التغيير اللي سويته أو لا؟")

1. Pareto charts
2. Run charts
3. Bar charts

Each will be explained within the next slide

Quality improvement tools

3. Pareto charts

- A bar chart in which the multiple factors that contribute to the overall effect are arranged in descending order according to the magnitude of their effect.
- It helps the team concentrate its efforts on the factors that have the greatest impact

  20% of causes lead to 80% of problems
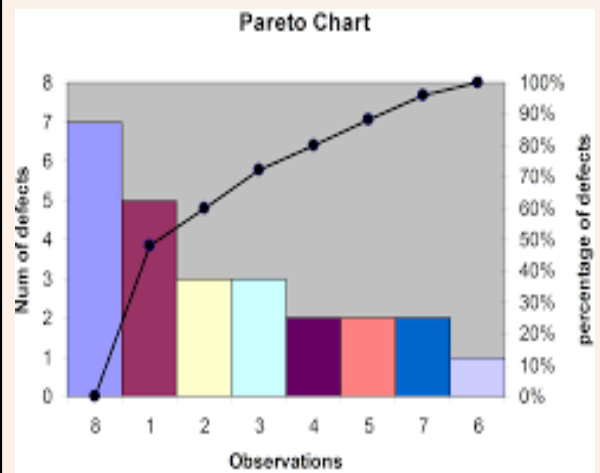
4. Run charts

Run charts or time plots are graphs of data over time. A run chart helps the team know if a change is an improvement over time or just a random fluctuation wrongly interpreted as significant improvement.
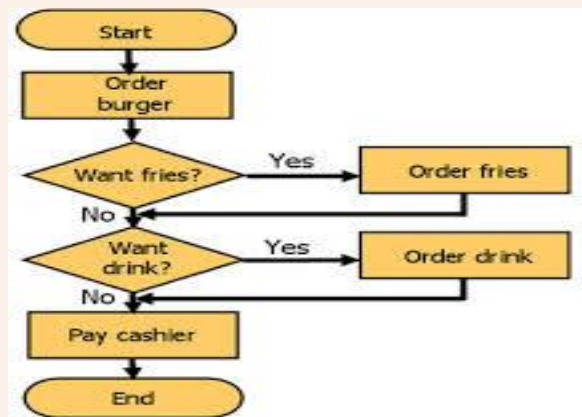
Y axis: Indicator, X axis: Time

استخدمه لما تكون القياسات خلال سنوات طويلة زي استبيان رضا الموظفين بكل سنة ٢٠١٦,٢٠١٧ و هكذا
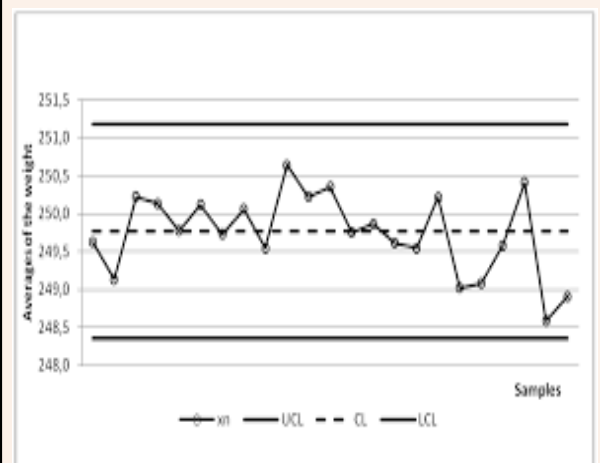
1. Flowcharts

A flowchart is a pictorial method for showing all the steps or parts of a process that makes up the system.
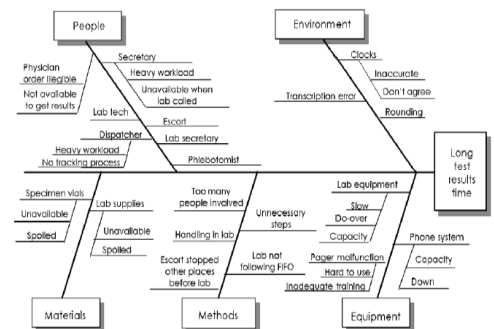

2. Cause and effect diagrams(ishikawa/fishbone) = RCA

A tool for solving problems. The diagram is used to explore and display the possible causes of a certain effect (Fish's head is the main problem)

Discussed above

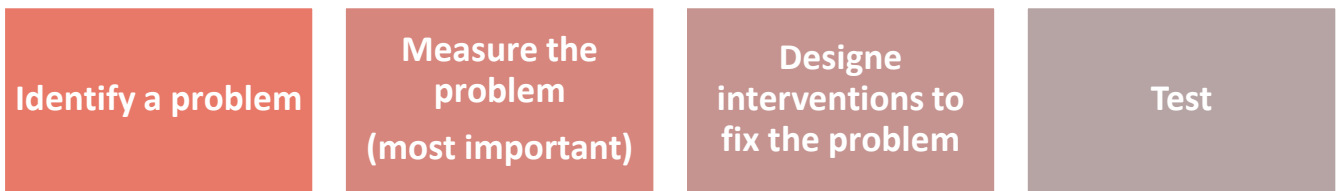Cause and Effect Diagram: "Fishbone"

Summary

- The patient care improves and errors are minimized when clinicians use quality improvement methods and tools.
- You cannot manage what you cannot measure'.
- Plan –Do – Check – Act' cycle, plays a key role in quality and productivity improvement activities.
- Flowcharts; fishbone; Pareto charts; and Run charts are effective tools for improvement
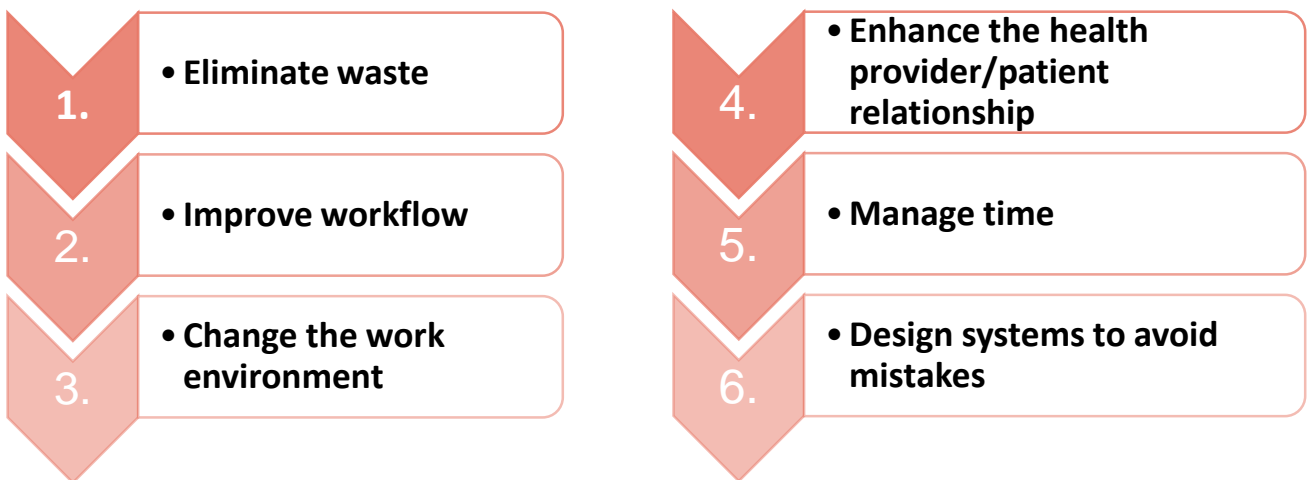
Summary

Basic Principles Of Quality Improvement

Identify a problem	Measure the problem (most important)	Designe interventions to fix the problem	Test

Three main types of measures:

Outcomes Measures → • ultimate goal of healthcare

Processes → • delivery of clinical services to patients

Structure → • characteristics of individual healthcare providers, organizations, and facilities

Change Concepts

1. • Eliminate waste

2. • Improve workflow

3. • Change the work environment

4. • Enhance the health provider/patient relationship

5. • Manage time

6. • Design systems to avoid mistakes

Quality improvement methods in health care

1. Clinical practice improvement (CPI) methodology
2. Root cause analysis (RCA).
3. Plan-Do-Study-Act cycle

Summary

Root Cause Analysis (RCA) : Is a defined process that seeks to explore all of the possible factors associated with an incident by asking what happened, why it occurred and what can be done to prevent it from happening again.

RCA components

i.   Multidisciplinary team
ii. finding out what happened
iii. Event flowchart
iv. problem statement
v.   Establishing the contributing factors

Plan-do-study-act Cycle : Three fundamental questions

1. What are we trying to accomplish?
2. How will we know whether a change is an improvement?
3. What changes can we make that will result in an improvement?

Quality Improvement Tools

i.   **Pareto charts :** multiple factors that contribute to the overall effect are arranged in descending order according to the magnitude of their effect.

ii. **Run charts or time plots :** are graphs of data over time.

Q1: What is the purpose of quality improvement methods?
- Identify a problem
- Measure the problem
- Develop a range of interventions designed to fix the problem
- Test wether the interventions worked

Q2: List the main types of measures?
- Outcome measures
- Processes measures
- Structure measures

Q3: Choose the correct answer:
i. It represents the ultimate goal of healthcare?
A. Outcome measures
B. Processes measures
C. Structure measures

ii. It represents the characteristics of individual healthcare providers, organizations, and facilities?
A. Outcome measures
B. Processes measures
C. Structure measures

iii. It represents the delivery of specific clinical services to patients, are often based upon clinical guidelines?
A. Outcome measures
B. Processes measures
C. Structure measures

iv. The 30-day mortality rate is an example of?
A. Outcome measures
B. Processes measures
C. Structure measures

v. Nursing to patient ratio in the ICU is an example of?
A. Outcome measures
B. Processes measures
C. Structure measures

i. A - ii. C - iii. B - iv. A - v - B

vi. Average length of stay and OR cancellations are examples of?
A. Outcome measures
B. Processes measures
C. Structure measures

vii. Percentage of medications errors happened at the hospital last year is an example of?
A. Outcome measures
B. Processes measures
C. Structure measures

viii. Number of nurses, beds, equipments in the hospital are examples of?
A. Outcome measures
B. Processes measures
C. Structure measures

ix. Defined process that seeks to explore all of the possible factors associated with an incident by asking what happened, why it occurred and what can be done to prevent it from happening again is the definition of?
A. Clinical practice improvement (CPI)
B. Root cause analysis (RCA)
C. Quality improvement tool

x. Is graphs of data over time helps the team know if a change is an improvement over time or just a random fluctuation wrongly interpreted as significant improvement?
A. Bar chart
B. Run Chart
C. Pareto chart

Q4: Mention 2 of continuous improvement methods?
1- Clinical practice improvement (CPI) methodology
2- Root cause analysis (RCA)

Q5: List 2 of quality improvement tools?
1- Pareto Chart
2- Run Chart

vi: B - vii: A - viii: C - ix: B - x: B

PATIENT SAFETY
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References: Doctors' slides & notes.