Key Performance Indicators

Measurable Facts to Tune Execution of the Business Plan

Prof. Dr. F. Vanstapel, MD PhD
Laboratoriumgeneeskunde
UZ KULeuven
Requirements of Standards

Teaching Goals

Intuitive Introduction

Operational Definition

Defining generic KPI’s

The PDCA-cycle

The Learning Organization

The political arena

Reinforcing desired outcome

Working with people

Nuts and Bolts

Summary
Cited from ISO 15189:2007

4.12.4 Laboratory management shall implement quality indicators for systematically monitoring and evaluating the laboratory’s contribution to patient care.
When this program identifies opportunities for improvement, laboratory management shall address them regardless of where they occur.
Laboratory management shall ensure that the medical laboratory participates in quality improvement activities that deal with relevant areas and outcomes of patient care.

4.1.6 Laboratory management shall ensure that proper communication processes are established within the laboratory and that communication takes place regarding the effectiveness of the quality management system.
Cited from JCI

**QPS.3.2** Clinical monitoring includes those aspects of laboratory services selected by the leaders.

...

Clinical monitoring data are used to study areas targeted for improvement.
KPI
Definition

1. Indicators for systematically monitoring and evaluating the laboratory’s contribution in improving relevant areas and outcomes of patient care.

2. Proper communication within the laboratory regarding the effectiveness of the system.
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Summary
Pre-Test

1. The introduction of KPI’s is important
   - for compliance with ISO-15189 and other standards
   - for policing the laboratory

2. The introduction of KPI’s results in
   - increased motivation of employee’s
   - improved performance
   - a net benefit over overhead investment in KPI’s
   - all of the above
   - none of the above
   - who secretly thought this?

The validity of the concept is questioned.
KPI’s are seen as an instrument of repression / coercion.

Why this negative premonition?
Pre-Test

3. To setup KPI’s
   □ define new statistics
   □ use existing statistics
   □ make statistics available for the management review
   □ post statistics periodically
   □ post statistics publicly

Teaching goal:
By understanding the answer to the above questions, to understand
- how to select (& validate) KPI’s
- how to go about their implementation
Requirements of Standards
Teaching Goals

**Intuitive Introduction**

Operational Definition
- Defining generic KPI’s
- The PDCA-cycle
- The Learning Organization
- The political arena
- Reinforcing desired outcome
- Working with people
- Nuts and Bolts

Summary
Life

= Open Systems maintaining Steady States

= Physiology of Permanence

Biology is the prime example of the Science of Cybernetics

(Norbert Wiener, Ross Ashby)
The insulin-glucose loop

- **Glucose-Insulin Loop**
- **Hepatic Output**
- **Glucose-FFA Loop**
- **Randle Cycle**

**Inputs**:
- Plasma Glucose
- Insulin
- Glucagon

**Outputs**:
- Plasma FFA
- Lactate
- Glycogen

**Substrate-Product Cycle**
- Cori Cycle
- Peripheral Disposal

**Sedentary**
- Obesity
- Stress

**Remote**
- Lymph Insulin

**Incretin Hormones**
- Glucagon
- Insulin

**Diabetes**
- IDDM
- NIDDM
- IDDM

**Key Performance Indicators**

**Intuitive Introduction**

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Summary 1/2

Physiology:
The glucose-insulin axis works (feedback cycle) because:
- There is an underlying metabolic machinery at work
- That system has its own characteristic set-point
- Hormonal control resets the set-point to a desirable level
- To that end a signal is sensed & processed
- In pathologic conditions the actual set-point differs

Your Business:
The PDCA cycle is not a fictional construction
- Your business is a system (aufbau & ablauf)
- That system has its own level of performance
- Management sets performance goals
- A KPI is measured & communicated
- Aberrant conditions require action
Summary 2/2

The **PDCA cycle** is not a fictional construction, but a cybernetic system = a system that can function by design

If your PDCA-cycle doesn’t work, it must be sick somewhere?
The patho-physiology of the PDCA-cycle is the topic of this lesson

IDDM (Type-1 DM) : Interrupted loop
NIDDM (Type -2 DM) : Insulin resistance & irresponsiveness
Sedentary lifestyle : No Pull on Glc-compartment

....
Requirements of Standards
Teaching Goals
Intuitive Introduction
Operational Definition
Defining generic KPI’s
The PDCA-cycle
The Learning Organization
The political arena
Reinforcing desired outcome
Working with people
Nuts and Bolds
Summary
Operational Definition

Intelligent Design

Step 1. What do you want ?
= Relevance

Step 2. Ask the right question
= What is the problem to solve ?

Step 3. Why doesn’t it work ?
= What were your *tacit wrong* underlying assumptions ?
Operational Definition

Intelligent Design = Relevance

Step 1. What do you want?
   What are your Business Goals?

What is your core-business?
What do you want to achieve?
What do you need for that?

Recipe:
Voice of the Customer (VOC)
Balanced Score Board / SWOT analysis
Operational Definition

Intelligent Design = Relevance

Step 1. What do you want?
What are your Business Goals?

Step 2. Ask the right question = What is the problem to solve?
What are necessary conditions to achieve your goal?
Performance Limiting Variables = determines the level of Value Generated

Of course it is important to manage critical resources

PATHOLOGY

Don’t provide excuses to wait for “external” solutions, in stead of thinking-up innovative alternatives !!!
Operational Definition

**Intelligent Design = Relevance**

Step 1. What do you want?
What are your Business Goals?

Step 2. Ask the right question = What is the problem to solve?
What are necessary conditions to achieve your goal?

Performance Limiting Variables = determines the level of Value Generated

Of course it is important to manage critical resources:
= be aware of opportunity costs = stick to your core-business

PATHOLOGY

Resources hijacked for hidden agenda’s of stake-holders
Operational Definition

Intelligent Design = Relevance

Step 1. What do you want?
What are your Business Goals?

Step 2. Ask the right question = What is the problem to solve?
What are necessary conditions to achieve your goal?
Performance Limiting Variable
= determines the level of Value Generated

How will you steer the course?
Value to be Generated translated into Objectives
Objectives translated into Accountable Targets

PATHOLOGY

Triad: (intangible) Values – Objectives – (tangible) Targets not defined
Operational Definition

Intelligent Design = Relevance

Step 1. What do you want?
What are your Business Goals?

Step 2. Ask the right question = What is the problem to solve?
What are necessary conditions to achieve your goal?
How will you steer the course?

Step 3. What are your underlying assumptions?
Do you understand your business-model?
Do you understand stake-holder objectives?

Assumptions are tacitly taken for granted and are never questioned

PATHOLOGY
Understand your Business Model
- Understand environment in which you operate
- Understand Stake-holder Objectives

My Core Business is Laboratory Diagnosis
- What is the Business Environment ?
- What are Requirements of the Diagnostic Process ?
- What are Remediable Weaknesses in the Diagnostic Process ?
The Laboratory Diagnosis Business Environment

Managed Health Care
not a free market but a subsidised system
5 parties: patients, insurers, government
health care providers, industry (pharmaceutical, ...)

Evolve towards consolidation to maximize share of subsidies

Generic KPI area’s:
Costs per product
The Laboratory Diagnosis Business Environment

Managed Health Care
not a free market but a subsidised system
5 parties: patients, insurers, government
health care providers, industry (pharmaceutical, ...)

Diagnostic assets becoming commodities

What is your Vision?
Lab as a production platform?
Lab as a consultative service?

Generic KPI area’s:
Costs per product
Consultative services
The Laboratory Diagnosis Business Environment

Information Technology

5 parties: patients, insurers, government health care providers, industry (pharmaceutical, ...)

Governance by patient of centralized database technically feasible

Evolve towards integrated whole business systems

True intelligent systems technically feasible

Generic KPI area’s:
Business integration
IT integration
The Laboratory Diagnosis Business Environment

What is your **Vision**?
- Equitable Health Care?
- The biggest piece of the cake?

**Generic KPI area’s:**
- Market share
- Return / Investment

Conflicting Interests:
- Government
- Health Care Providers
- Insurers
- Health Care Industry
- Patients
Understand your Business Model
- Understand environment in which you operate
- Understand Stakeholder Objectives

My Core Business is Laboratory Diagnosis
- What is the Business Environmental?
- What are Requirements of the Diagnostic Process?
- What are Remediable Weaknesses in the Diagnostic Process?
Requirements of any diagnostic tool

- Relevant
- Accurate
- Timely
- Accessible
- Understandable
- Comparable
- Coherent
- Complete
- Right price / costs

= purposive

Specs / targets

cfr. method validation file
**Logistic requirements** of laboratory test

- **Relevant**: position / function in care algorithm(s)?
- **Accurate**: sampling design
- **Timely**: timing / TAT with respect to care program(s)
- **Accessible**: test request / reporting of results & conclusions
- **Understandable**: cumulative reports / reference & decision limits
- **Comparable**: over methods / time frames
- **Coherent**: with other tests & procedures
- **Complete**: identification of lacking / censored data
- **Right price/costs**: low financial & user burden to patients & medical staff
  
  (non exhaustive list)

**Generic KPI area’s:**

- Implementation of Care Paths
- Consultative services
- TAT, cost
Analytical requirements of laboratory test

- Relevant
- Accurate: data processing / analytical traceability
- Timely
- Accessible
- Understandable: traceability to the applicable clinical studies
- Comparable: commutability over methods / time frames
- Coherent: diagnostic specificity of measurement
- Complete
- Right price/costs: process excellence

Pathology

Balance Logistic / Analytical Requirements not respected

Generic KPI area’s:

Process Excellence
- Corrections
- iQC-problems
- Cost / object
Understand your Business Model
- Understand environment in which you operate
- Understand Stake-holder Objectives

My Core Business is Laboratory Diagnosis
- What is the Business Environment?
- What are Requirements of the Diagnostic Process?
- What are Remediable Weaknesses in the Diagnostic Process?
RISK ANALYSIS - FAULT TREE in Laboratory Diagnosis

Right test for the right patient at the right time?
Right interpretation at the right time?
Right consequential action at the right time?

BRAIN-TO-BRAIN CYCLE

Diagnostic Workup

Request LabTest

Sample → collect condition → transport → condition aliquot

Reagents → obtain → store → condition formulate
Calibrators → obtain → store → condition formulate
Controls → obtain → store → condition formulate
Instruments → install → maintain → setup
Operators → train

LIS

PATHOLOGY

Wrong Focus

Use → Interpret → LOGISTICS

OUTCOME

Treat

Generic KPI area’s

TAT (B2B)
Consultative services
Critical value reporting

...
RISK MANAGEMENT - METHOD VALIDATION

Method Validation Process

Clinical Scenario
Inventory of Means
Selection of Means

Requirements ?
Suitability ?

Risk Analysis
determine medically
Important Errors

Select Appropriate
Control Procedures

Implementation

Evaluation of
Clinical Path

Generic KPI:
Outcome Care Program
Number to Treat / Days Hospitalization / ...

Diagnostic Process

Patient
Symptoms

Test Request
Sampling

Analysis

Report

Model
- differential diagnosis
- measurement model

Evaluation

Treatment

Generic KPI:
Diagnostic Acuity

Generic KPI:
Process Excellence

Operational Definition: Defining generic KPI’s
Summary: Values – Objectives – Targets

(Kaplan, Norton)

Financial Balance

Customer Perception

Vision & Strategy

Internal Processes

Learning Knowledge

Vision & Strategy

External Stakeholders

Internal Stakeholders

Tangible goods

Intangible goods

Your KPI is purposeless = does not relate to VALUE

PATHOLOGY
Requirements of Standards
Teaching Goals
Intuitive Introduction

Operational Definition
Defining generic KPI’s
The PDCA-cycle
The Learning Organization
The political arena
Reinforcing desired outcome
Working with people
Nuts and Bolts

Summary
Operational Definition
Intelligent Design = Effectiveness

Step 3. What are your underlying assumptions?
Do you understand your business-model?
Do you understand stake-holder objectives?

You assume that “measuring” results in “a beneficial effect”
What are necessary conditions for your KPI to give the right stimulus?
= related to incentives?
= do you have sufficient lay-way to operate?

KPI Definition 3
Incentives management?
Project management?

No stick to hit the dog
Key Performance Indicators
Operational Definition: The PDCA-cycle

Operational Definition
KPI’s stem from Intelligent Design

1. Define goal = Value you want to create
2. Define objective = Target to aim at
3. Make achievements accountable
4. Analyse deviation (variation) from set targets
5. Stay focused, Stay on track

FACTS likely to influence decisions = RELEVANT EVIDENCE
RELEVANT EVIDENCE leading to a DECISION = a DIAGNOSTIC PROCESS

Concept-driven

Fact-driven

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Operational Definition

KPI’s as a diagnostic process

Diagnostic scenario’s
- is your patient sick?
- does the patient respond to your therapy?
- does response persists?

A diagnosis only becomes a diagnosis by becoming consequential
(= to reinforce the right action at the right time)

KPI Definition 3
Operational Definition
from Key Conditions to Key Deliverables

Plan

Act upon
KPI = Performance-Limiting Variables

Act

Check

Do

Make stakeholder accountable for
KPI = delivered outcome key to their Interests

Incentive = tension between the actual and the desired

MANAGEMENT
Concept-driven

(visions in Business Model)

WORKFLOOR
Fact-driven

PATHOLOGY
You are PUSHING Quality in stead of
your (internal) stakeholders PULLING Quality
Operational Definition

Optimized Stable Processes

Tool: Statistical Process Control

For as long as the process is in use (In principle) fixed set-points

Tool: Key Performance Indicators

For as long as project realization takes
Set-point(s) evolve(s)

Intermittent Evaluation & Care

narrows cone of uncertainty
The Learning Experience

Expectations

Question: Why?

Experiences

The answer:
Because of Experiences & Expectations

α and ω
The Learning Experience

Modeling: When will iterations converge?
- law of minimal required complexity
- anything more than that will be undetermined

Ross Ashby
Requirements of Standards
Teaching Goals
Intuitive Introduction

Operational Definition

- Defining generic KPI’s
- The PDCA-cycle

The Learning Organization

- The political arena
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Summary
The Learning Organization (Aufbau)

Management
- communicate business goals
- integrate information
- dissipate knowledge
- facilitate communication

Quality System
- coordinate keep focus

Project Management
- author & actor
- Workfloor
The Learning Organization (Aufbau)

Top Management

Middle Management

Neuronal Network
Hierarchical system for processing information & knowledge

Neuronal hierarchical system is a prerequisite, but insufficient condition
The **Learning Organization** (Aufbau)

Choose for **Robustness** not for **Fragility**

**Middle Management**

- Process information
- Decouple failing systems
- Communicate good & bad news up & down

**Neuronal Network**

Hierarchical system for processing information & knowledge

**Top Management**

**Role of middle management**

- Middle management has to be held accountable for execution of the business plan i.s.o. its own hidden agenda’s

**Pathology**

- Choose for **Robustness** not for **Fragility**

**Key Performance Indicators**

Operational Definition: The Learning Organization

Slide 46

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The Learning Organization (Ablauf)

Is learning understood?

Knowledge building:
- Open debate (Popper)

Knowledge sharing:
- Cooperation and Synergism

Is the process managed?

- Is learning a valued business goal?
- Is learning process organized / facilitated?
- Are measurable objectives (KPI’s) defined?
- Is staff made accountable?

Is the chosen learning KPI adequate?

- Participation?
- Project Outcome?
- Timeliness of outcome?

KPI definition 5
To learn is to reinforce desired behaviour
The **Learning Organization**

**Is the process understood?**
- Knowledge building
- Open debate
- Knowledge sharing
- Cooperation and Synergism

**Is the process managed?**
- Is learning a *valued* business goal?
- Is learning *process* organized / facilitated?
- Are measurable objectives (*KPI’s*) defined?
- Is staff made accountable?

**Is the chosen KPI adequate?**
- Participation?
- Project Outcome?

**Why aren’t we innovative?**
- Competition?
- Eminence - Dogmatic?
- Monopolize power?

---

Cooperation and Synergism
- Knowledge sharing
- Open debate

---

KPI reporting on resources may reinforce wrong behavior?
- Project Outcome?
- Participation?
- Investigator grants?
- Number of publications?
The Learning Organization

Is the process understood?
- Open debate
- Knowledge sharing
- Cooperation and Synergism

Why aren’t we innovative?
- Competition?
- Eminence - Dogmatic?
- Monopolize power?

Innovative cooperation

Wasteful competition

scarcity abundance
resources

Survival through
Adaptability
Altruistic strategies

Temporary advantage through
Specialisation
Egoistic strategies

(Economic paradigm)

(Darwinian paradigm)
Requirements of Standards
Teaching Goals
Intuitive Introduction

Operational Definition
   Defining generic KPI’s
   The PDCA-cycle
   The Learning Organization

The political arena
Reinforcing desired outcome
Working with people

Nuts and Bolds

Summary
With scarcity, abundance, cooperation, competition, resource management, we have entered

**the Political Arena**

Not to wail about lacking resources, but **to work within the given constraints**

Not settling for the status quo, but **innovative thinking** (a quantum leap)

Not using KPI’s to serve your arguments, but **using data to achieve objectives**

Not the governing coalition against ..., but **we are in it together**

**PATHOLOGY**

The KPI’s are hijacked, as they suit hidden agenda’s
The Political Arena

Keep the Communication Channels OPEN

Management
- communicate business goals
- integrate information
- dissipate knowledge

Quality System
- facilitate communication
- coordinate keep focus

Middle Management
- author & actor Workflow
- author & actor Workflow
- author & actor Workflow

Project Management
- PATHOLOGY
  - Coalition shifts with breakdown of information & knowledge processing hierarchical lines

PATHOLOGY
- Enacting hidden agenda’s
Ownership of processes

- The organization shall **identify & assign owners to main processes**
- **Ownership** does not make one automatically an **expert**
  - expert behavior is an attitude = a general competence
  - experts share knowledge
  - ownership allows one to identify with and to **act morally**
  - owners have to be held **accountable**

- The “quality control/assurance system”
  - should facilitate problem solving,
  - but it should never assume ownership

- Develop a **culture of “knowledge sharing”**
  - hurdles to knowledge sharing:
    - knowledge is power
    - not sharing knowledge makes one irreplaceable
  - make “**expansion of shared knowledge**”
    - a measurable and accountable “**business target**”
  - culture = open (fact-, not opinion-driven) debate ≠ dogmatic

**PATHOLOGY**
- actors not made the authors of change
- no recognition for contributions
Integral Quality Management 🎨

How to optimize the functioning of your people?

1. Focus on clients
2. Leadership
3. Involvement of People
4. Process approach
5. System approach to management
6. Continual Improvement
7. Factual approach to decision making
8. Mutually beneficial supplier relationships

Quality is a task of all
Ownership of Processes
Learning Organization
Coaching

Lack of an
OPEN, EMPATHIC, LEARNING CULTURE

From: command, control, constraint, contract
To: discipline, trust, stretch, support

PATHOLOGY

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Requirements of Standards
Teaching Goals
Intuitive Introduction
Operational Definition
- Defining generic KPI’s
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- The political arena
Reinforcing desired outcome
- Working with people
Nuts and Bolds
Summary
The Learning Process
Reinforcement of the desired outcome

**Negative Feedback**

\[ \Delta * -k < 0 \]
\[ \Delta * -k > 0 \]

- Actual Situation 1
- Desired Set-point
- Actual Situation 2

KPI result
Reinforcement of the desired activities
Addressing the **Processes** in your Organization

\[ \Delta \cdot -k < 0 \]

- Undesired Events
- Average Output 1
- Desired Output

**Negative Reinforcement**

- POKA
  - Fail-safe design

**Definition 6:**
- To learn from your mistakes

**PATHOLOGY**
- The KPI’s are not used to learn from
Operational Definition

**Intelligent Design**

Step 1. What do you want？
   = Relevance

Step 2. Ask the right question
   = What is the problem to solve？

Step 3. Why doesn’t it work？
   = What were your *tacit wrong* underlying assumptions？

Step 4. The right solution is the best solution？
   = *elegant* = simple, the least steps, robust？
Operational Definition
\textbf{Intelligent Design}

Step 4. The right solution is the best solution?
\begin{itemize}
  \item = elegant = simple, the least steps, robust?
\end{itemize}

People are “programmed” to make “\textit{ecological}” decisions
\begin{itemize}
  \item = to economize on efforts = to negotiate risk
\end{itemize}

by
\begin{itemize}
  \item - Bayesian approach = minimize risk, by making an informed gamble
  \item - Heuristic approach = avoid risk, by a work-around
  \item - Economic approach = be aware of opportunity costs
\end{itemize}

\textbf{PATHOLOGY} Not to recognize that
a procedure which is not accepted probably is a bad procedure
So kompliziert wie nötig, so einfach wie möglich

Günther Erdmann
(German composer)
Reinforcement of the desired activities
Addressing the **PEOPLE** in your Organization

Key Performance Indicators
Operational Definition: Reinforcing desired behavior

Definition 6:
To **learn** from your mistakes

**POKA**
Fail-safe design

The business culture is not inductive for learning

Definition 1:
To **learn** is a cooperative endeavor

**POKA**
Fail-safe design

The business culture is not inductive for learning
Reinforcement of the desired activities
Addressing the **PEOPLE** in your Organization

\[ \Delta * -k < 0 \]

- **Undesired Events**
- **Desired Output**

**Average Output**

**Positive Reinforcement**

**Negative Reinforcement**

**Punishment & Rewards**

**Extinguish by removal of collateral incentive**

Definition 6: to condition your coworkers

PATHOLOGY

A culture of coercion in stead of coaching

(after Skinner Conditioning paradigm)
Reinforcement of the desired activities

Addressing the **PEOPLE** in your Organization

**Undesired Output 1**
- Punish
- Extinguish

**Desired Output**
- Incentives

Average Output 1

Increasing efficiency

**Incentives**

- Positive incentives: persists as long as scarcity is not satisfied
- Negative incentives: removal of a negative effect by engaging in desired behavior

**Punishment & Rewards:**
- Elicits a negative stimulus by engaging in undesired behavior
- Elicits a reward by engaging in desired behavior

Create resentment

**Inefficient:** requires persistent control

**Intrinsic motivation**
- The desire for self-realization
  = desire to learn
Reinforcement of the desired activities
Addressing the **PEOPLE** in your Organization

Punishment & Rewards:

If so inefficient, why is this then second nature to us?

- An aggressive / authoritarian stance prevents worse aggression?
- We react aggressively when the ideas don’t come?
  when we fear for our authority?
Reinforcement of the desired activities
Addressing the **PEOPLE** in your Organization

- Undesired Output 1
- Punish
- Extinguish

+ Average Output 1

0 Desired Output

Incentives

Increasing efficiency

**Punishment & Rewards:**
- If so inefficient, why is this then second nature to us?
- We react aggressively when we fear for our authority?

R) True **AUTHORITY** stems from

- TRUST,
- PREDICTABILITY,
- FAIRNESS

= COMMUNICATE THE BUSINESS PLAN
= GENUINE COACHING
= RECOGNIZE AUTHORSHIP

necessary conditions for self-realization of your co-workers
Reinforcement of the desired activities
Addressing the **PEOPLE** in your Organization

**Key Performance Indicators**
Operational Definition: Reinforcing desired behavior

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++

Undesired Output 1
Punish
Extinguish

Average Output 1

0 Desired Output
Incentives

---

**Punishment & Rewards:**

If so inefficient, why is this then second nature to us?

- When the ideas don’t come, we fear for our authority?

+ You don’t need to have the answer
- You need to find the solution together

---

PATHOLOGY

Lack of a culture of togetherness = not inductive for learning
Reinforcement of the desired activities
Addressing the **PEOPLE** in your Organization

- Undesired Output 1
- Punish
- Extinguish

- Average Output 1
- Satiety
- Contingency

- Desired Output
- Incentives
- Immediacy

The stimulus is not fit for purpose / not adequate

**PATHOLOGY**

Does the reinforcing stimulus relate reliably to value for you?

**Key Performance Indicators**
Operational Definition: Reinforcing desired behavior
Summary

Specific
Measurable
Attainable
Relevant
Timely

Diagnostic pole of the definition

Contingency
Consequential
Satiety
Immediacy

Learning pole of the definition

The diagnostic characteristics of your KPI are not fit for purpose
Teaching Goals
Intuitive Introduction
Requirements of Standards
Operational Definition
  Defining generic KPI’s
  The PDCA-cycle
  The Learning Organization
  The political arena
  Reinforcing desired outcome & behavior
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  Nuts and Bolds

Summary
What is your largest cost-component?
Why then work with People?

People vs Machines

- Versatility
- Flexibility
- Problem-solving abilities

Generic KPI area’s:
- Degree of Cross-training
- Flow over workplaces
- Leadership
... = measurable elements, suitable for performance appraisal interviews

Human Resource Management not overlooked by KPI’s
HUMAN RESOURCE MANAGEMENT:
Characteristics of expert (= intelligent) behavior

- Expert attitudes (after SR Covey)
  - Confidence and self-reliance
  - Value- / Purpose-oriented
  - Empathic, Cooperative, Synergetic

- Expert problem solving skills (= intelligence)
  - Can formulate the right question
    - sticks to the purpose: Stays on track; Does not lose focus
    - can visualize data sets in order to ask the right question
  - Recognizes assignable variation and acts upon this
  - Does not act on random variation
    (recognizes problems without technical solution
does not introduce variation / deterioration by futile actions)
  - Solves problems using the simplest, elegant and robust techniques
  - Organizational talents: multitasking & time-management

- Learns continuously
  - Self-observation: understands why actions / attempts to solve problems/
  communication of results and solutions fail and learns from this
  - After recognizing failing approaches,
does not persist with fruitless attempts,
but switches to alternative approaches
Summary: Integral Quality Management

1. Focus on clients
2. Leadership
3. Involvement of People
4. Process approach
5. System approach to management
6. Continual Improvement
7. Factual approach to decision making
8. Mutually beneficial supplier relationships

Lack of an OPEN, EMPATHIC, LEARNING CULTURE
From: command, control, constraint, contract
To: discipline, trust, stretch, support
Teaching Goals

Intuitive Introduction

Requirements of Standards

Operational Definition

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Summary
INVENTORY of KPI Area’s

Method Validation Process

Clinical Scenario
Inventory of Means
Selection of Means

Requirements ?
Suitability ?

Risk Analysis
determine medically
Important Errors

Select Appropriate
Control Procedures

Implementation

Evaluation of
Clinical Path

Diagnostic Process

Model
- differential diagnosis
- measurement model

Patient
Symptoms

Test Request
Sampling

Analysis

Evaluation

Report

Analytical Process

Generic KPI:
Diagnostic Acuity

Generic KPI:
Outcome Care Program

Generic KPI:
Process Excellence

Treatment

Diagnostic Process

Analytical Process

Generic KPI:
Process Excellence

Evaluation

Report

Analytical Process

Generic KPI:
Process Excellence
INVENTORY of KPI Area’s

**Outcome Care Program**
- Total costs of care
- Number to treat
- Days to stay
- Number of (avoidable) complications
- Variance with care path
- Therapy adjustments in function of results (diabetes treatment, antibiotics use, ...)
- Follow-up of alarm values
- Follow-up of corrections
- ... 
- TAT
- Cost per result
- Human Resource Management (degree of cross-training, ...)
- ...

**Diagnostic Acuity**
- Reduction of avoidable errors (corrections)
- Reduction of superfluous corrections (=waste)
- Sampling (labeling, volume, hemolysis, ...)
- ...

**Organizational Excellence**
- ...

**Analytical Process Excellence**
- ...

Key Performance Indicators
Nuts and Bolds
Validation of KPI as a good Diagnostic Tool

Specific
Measurable
Attainable
Relevant
Timely

Contingency
Quantitative & Validated
Consequential
Satiety
Immediacy

attainable targets
related to concerns of process-owner
= purposive = relevant
Validation of KPI as a good Diagnostic Tool

Specific
Measurable
Attainable
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Timely

Contingency
Quantitative & Validated
Consequential
Satiety
Immediacy

inventory of statistics
discard what is waste
keep what is relevant
plan maintenance of your KPI
(validation, set-points, ...)

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Validation of KPI as a good Diagnostic Tool

Specific, Measurable, Attainable, Relevant, Timely

Contingency, Quantitative & Validated, Consequential, Satiety, Immediacy

error-free = good signal/noise expressed relative to an attainable goal
Validation of KPI as a good Diagnostic Tool

**Specific**
**Measurable**
**Attainable**
**Relevant**
**Timely**

Effective signal = stimulus detects relevant deviations from set-points

signals positive vs negative deviation from set-point

no refractory delays can be directly interpreted, without extra analysis
Operational Definition

Intelligent Design = Relevant & Optimized

Step 1. What do you want?
What are your Business Goals?

Step 2. Ask the right question = What is the problem to solve?
What are necessary conditions to achieve your goal?
How will you steer the course?

Step 3. What are your underlying assumptions?
Do you understand your business-model?
Do you understand stake-holder objectives?

Step 4. The right solution is the best solution?
= elegant = simple, the least steps, robust?
Operational Definition

Intelligent Design

Step 4. The right solution is the best solution?

= elegant = simple, the least steps, robust?

People are “programmed” to make “ecological” decisions

= to economize on efforts = are willing to take a risk

provided they are not caught red handed

PATHOLOGY

Not to invest in

contingency & immediacy

as prime “logistic” requirements

of a good “diagnostic” KPI
Teaching Goals
Intuitive Introduction
Requirements of Standards
Operational Definition
  Defining generic KPI’s
  The PDCA-cycle
  The Learning Organization
  The political arena
  Reinforcing desired outcome & behavior
  Working with people
Nuts and Bolds

Summary
Strategic Planning

Analysis → Objectives

Strengths → Specific
Weaknesses → Measurable
Opportunities → Attainable
Treats → Relevant

Key Performance Indicators

Summary
Open the **Communication Channels**

- **Management**
  - communicate business goals
  - integrate information
  - dissipate knowledge

- **Quality System**
  - facilitate communication

- **Middle Management**
  - coordinate
  - keep focus

- **Project Management**

- **Workfloor**
  - author & actor

- **Open the Communication Channels**
  - Communicate up & down
  - Process information
  - Decouple failing systems
Don’t flood the Communication Channels

When not to measure?
- Design from first principles
- Fail-safe POKA-design
  (except for the purpose of validation of POKA implementation)

When to measure?
- Analysis: identify rate-limiting steps & targets
- Quantitative signals for process-steering
  - convert in-tangible purposes into specific targets
  - have to be relevant & valid
- Before- and after-measurements
  - for maintenance of implemented policies
  - for internal marketing purposes

When to distrust / cancel measurements?
- Collected data hijacked for hidden agendas?
- Stimulus fuels undesirable reactions
**Take-home Message**

1. The introduction of KPI’s is important
   - for compliance with ISO-15189 and other standards
   - for policing the laboratory

   KPI’s are a **managerial tool**
   
   measuring performance in key area’s

2. The introduction of KPI’s resulted in
   - increased motivation of employee’s
   - an increase in performance
   - a net benefit over overhead
   - the opposite of the above

   insist on **process-ownership**
   
   embrace an **active learning interaction**