

140119 Lean työkalut käytännön työssä-osa II

Vaj juha kemppinen

3. Lean metodit ja työkalut

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Muda – 7 wastes of lean

Mura – not leveled workflow

Muri – overloading of workers and assets

3. Lean metodit ja työkalut

- **Muda ,Mura & Muri**

- **Gemba** framework
- Takt time (tahtiaika)
- **5S principles**
- **Visual management**
- Office layout
- **Spaghetti diagram**
- **Value stream mapping**
- **Standard work**

- **Heijunka** (Load leveling)
- Flexible workforce
- Quality at source
- Poka yoke (mistake proofing)
- Kaizen
- **PDCA problem solving**
- **Pareto chart**
- **5 whys**
- **Cause and effect diagram**

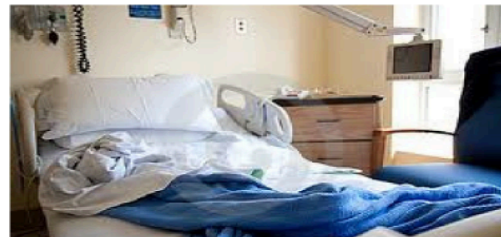
Defects

- Medication error
- Wrong procedure
- Wrong patient
- Missing information
- Paperwork doesn't match
- Information entered incorrectly
- Incompatible software
- Lack of standard work



Waiting

- For bed assignments
- Discharge,
- Testing results
- Approvals
- Equipment
- Couriers
- People...

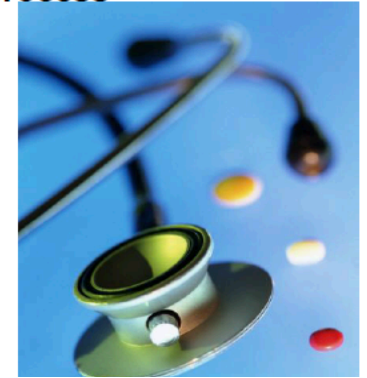


vai juha kemppinen

Overproduction

- Making more than is required by the next process
- Making it earlier than is required by the next process
- Making it faster than is required by the next process

- Pills given out early
- Multiple bosses & multiple jobs cause wrong order of jobs
- Duplication of tests



Not Utilizing Employee's Knowledge, Skills, and Abilities

The waste of not using people's abilities (mental, creative, physical, skill)

Causes of People Waste

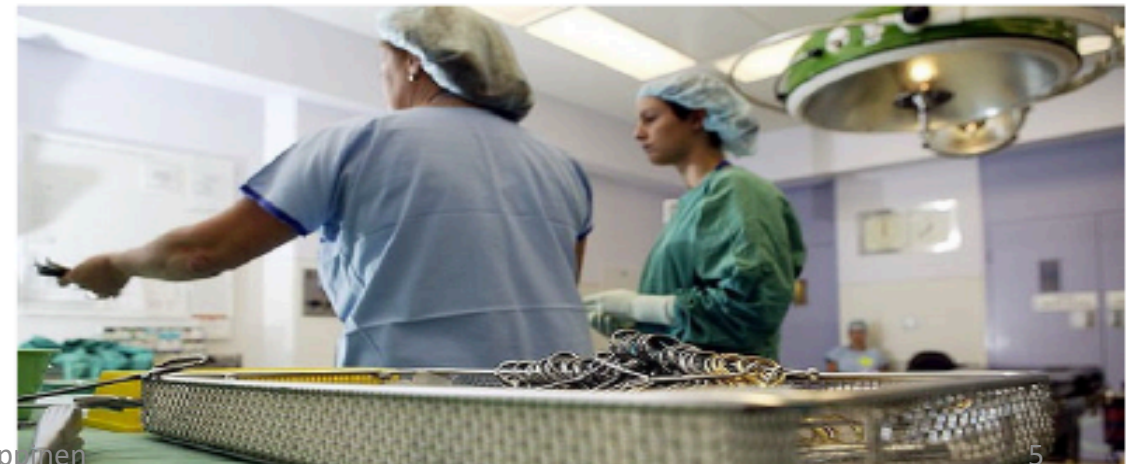
- Incompatible hiring practices
- Politics
- Corporate culture
- Improperly trained employee
- Old guard thinking
- Business culture

Examples

- Bypassing procedures to hire a favorite candidate
- Start using system software without prior training
- Qualifications unclear
- Not providing opportunity for growth
- Temporary workforce
- Flawed suggestion system

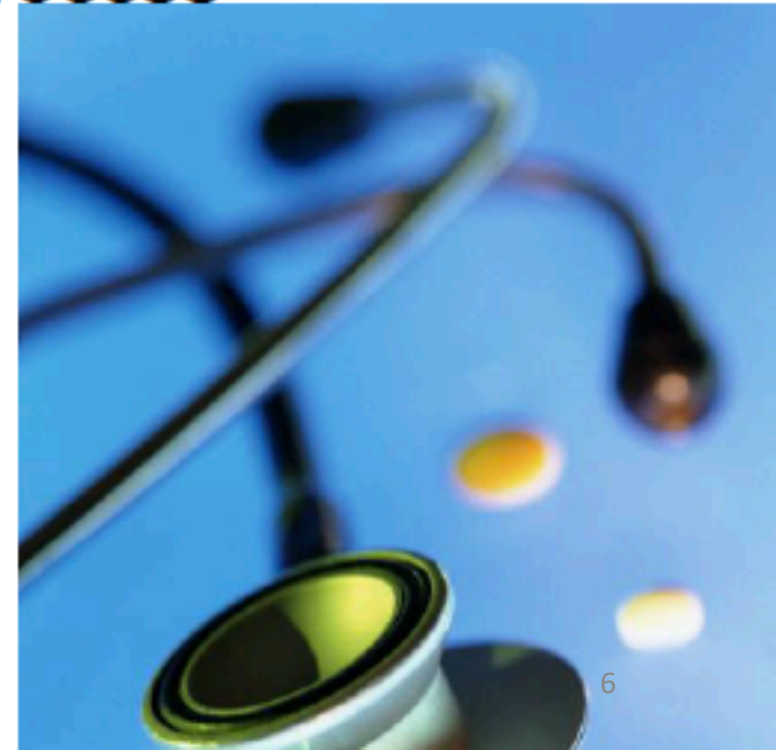
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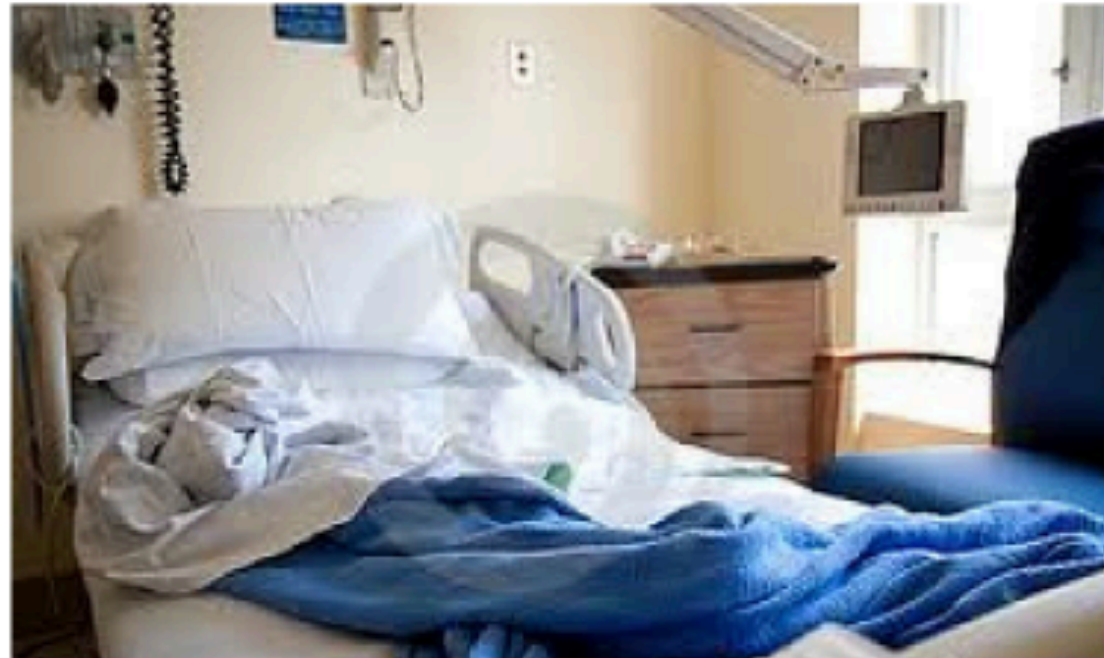
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Transportation

- Moving same patient, specimens, or supplies,
- Defects/rework
- Poor layout
- Poor scheduling



Motion

Any movement of people or machines that does not add value to the product or service

- Searching for patients, needed meds right charts, supplies
- Common items stored on top or bottom shelves.



Excess Inventory

Any supply in excess of a one-piece flow through your process

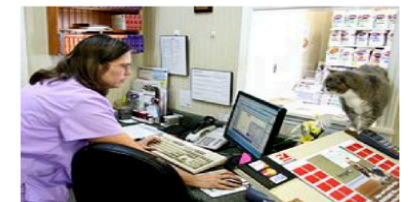
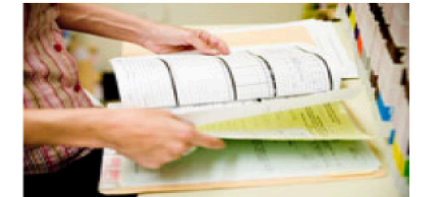
- Pharmacy stock
- Supplies (discount)
- Specimens waiting for analysis
- Files, manuals
- Patients...



Excess Processing

Effort that adds no value to the product or service from the customers' viewpoint

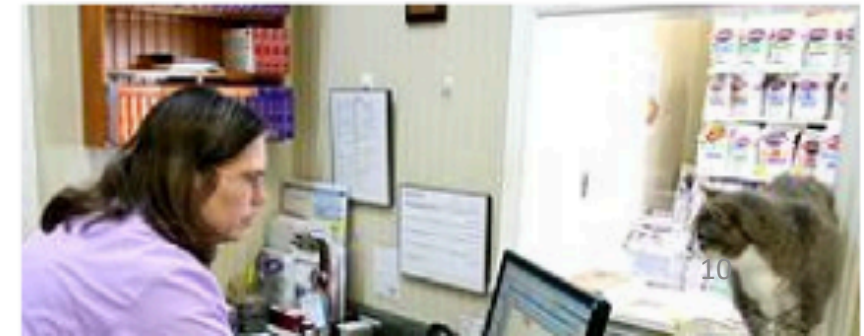
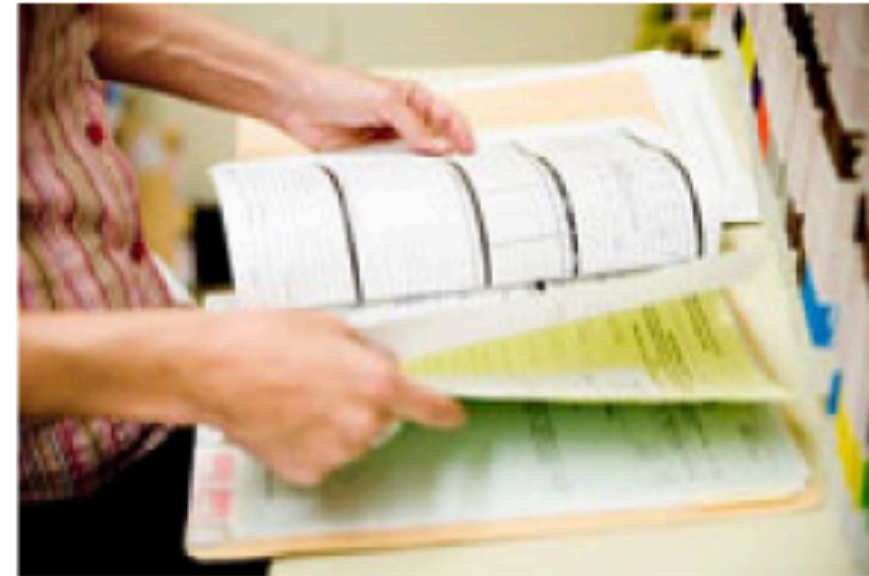
- Retesting
- More paperwork. Printing, mailing, faxing emailing same document
- Duplicate procedures, forms
- Use of different software in different departments



Excess Processing

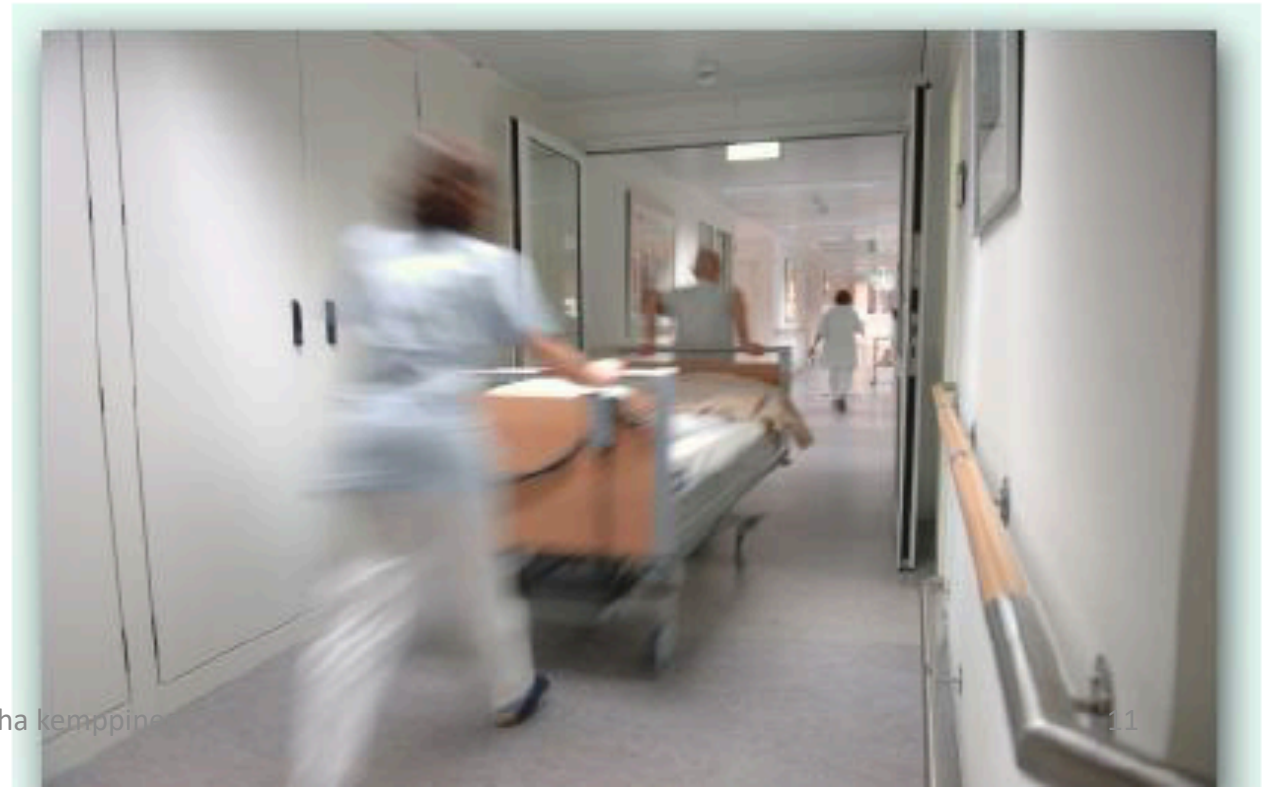
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Kahdeksan eri hukkatuotannon muotoa (waste, Lean-ajattelu)

Tachii Ohno



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Integroitu mielenterveys- ja päihdepalvelut (Miete) Eksotessa

- Gemba tarkoittaa etulinjaa. Etulinja on paikka, jossa potilaan tarpeet kohdataan ja jossa potilas kohtaa hoitojärjestelmän.
- **Gemba on paikka, jossa arvo potilaalle luodaan.**
- **Reengineering (~ kaikaku) on perustavaa laatua oleva uudelleenajattelu ja radikaali liiketoimintaprosessien uudelleen järjestely, minkä tarkoituksena on tuoda dramaattinen parannus suoritukseen (Hammer, 1990; Hammer and Stanton, 1995).**

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TAKT TIME

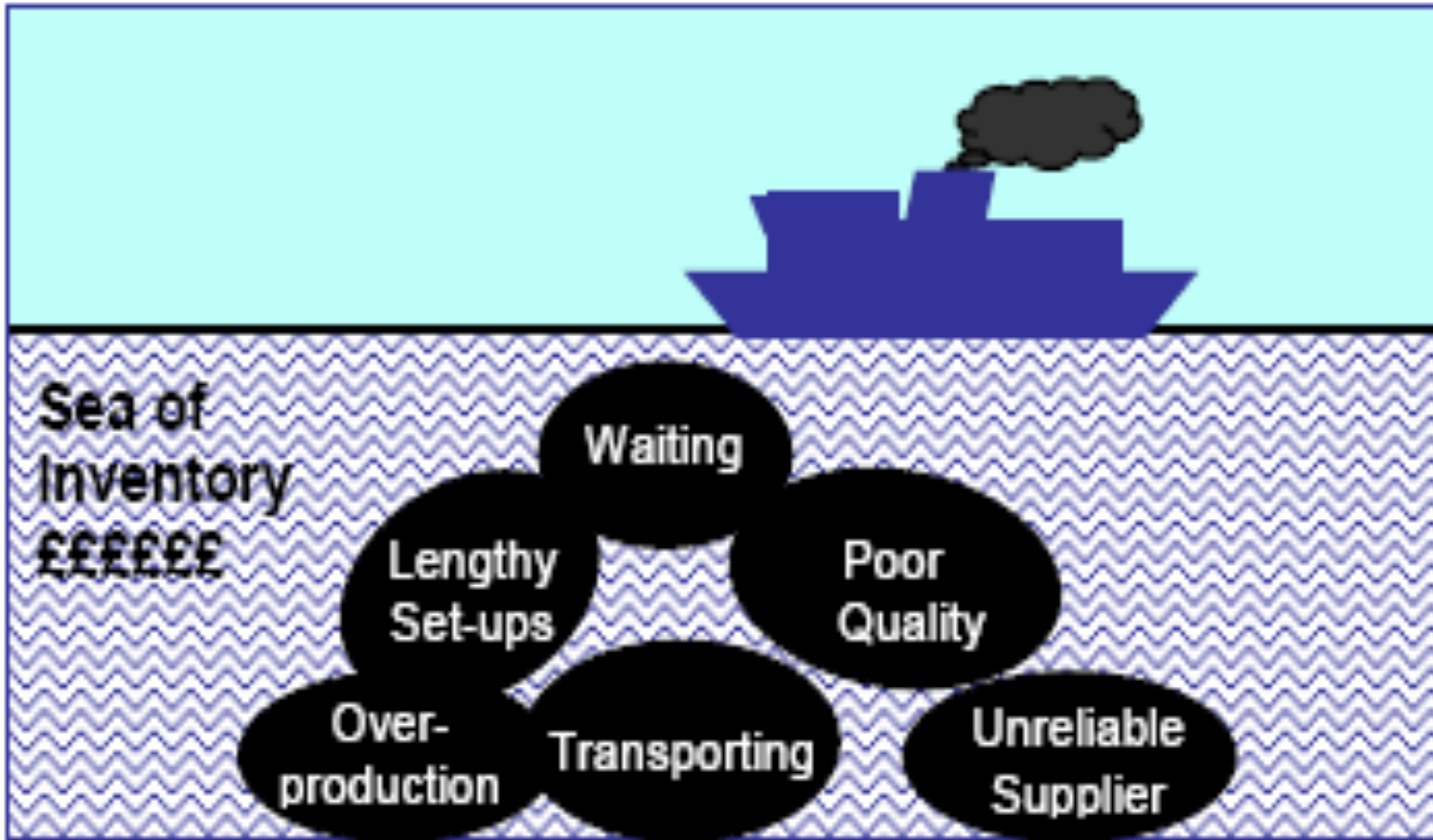


$$\text{Takt Time} = \frac{\text{Effective Working Time per Shift}}{\text{Customer Requirement per Shift}}$$

Synchronizes pace, evenly applying customer demand across the work day.

Takt Time is "Beat Time"? "Rate Time" or "Heart Beat" Lean Production uses Takt Time as the rate or time that a completed product is finished. If you have a Takt Time of two minutes that means every two minutes a complete product, assembly or machine is produced off the line. (http://www.isixsigma.com/dictionary/Takt_Time-455.htm)

18



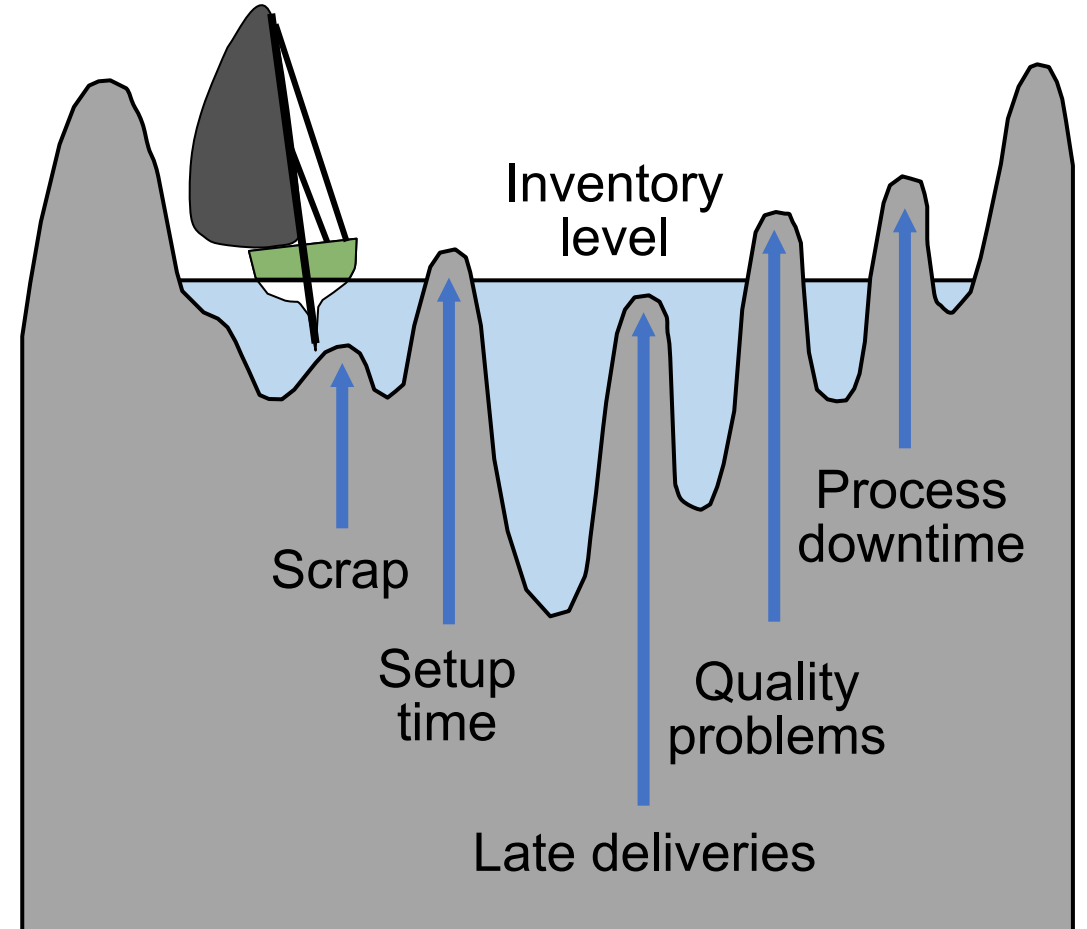
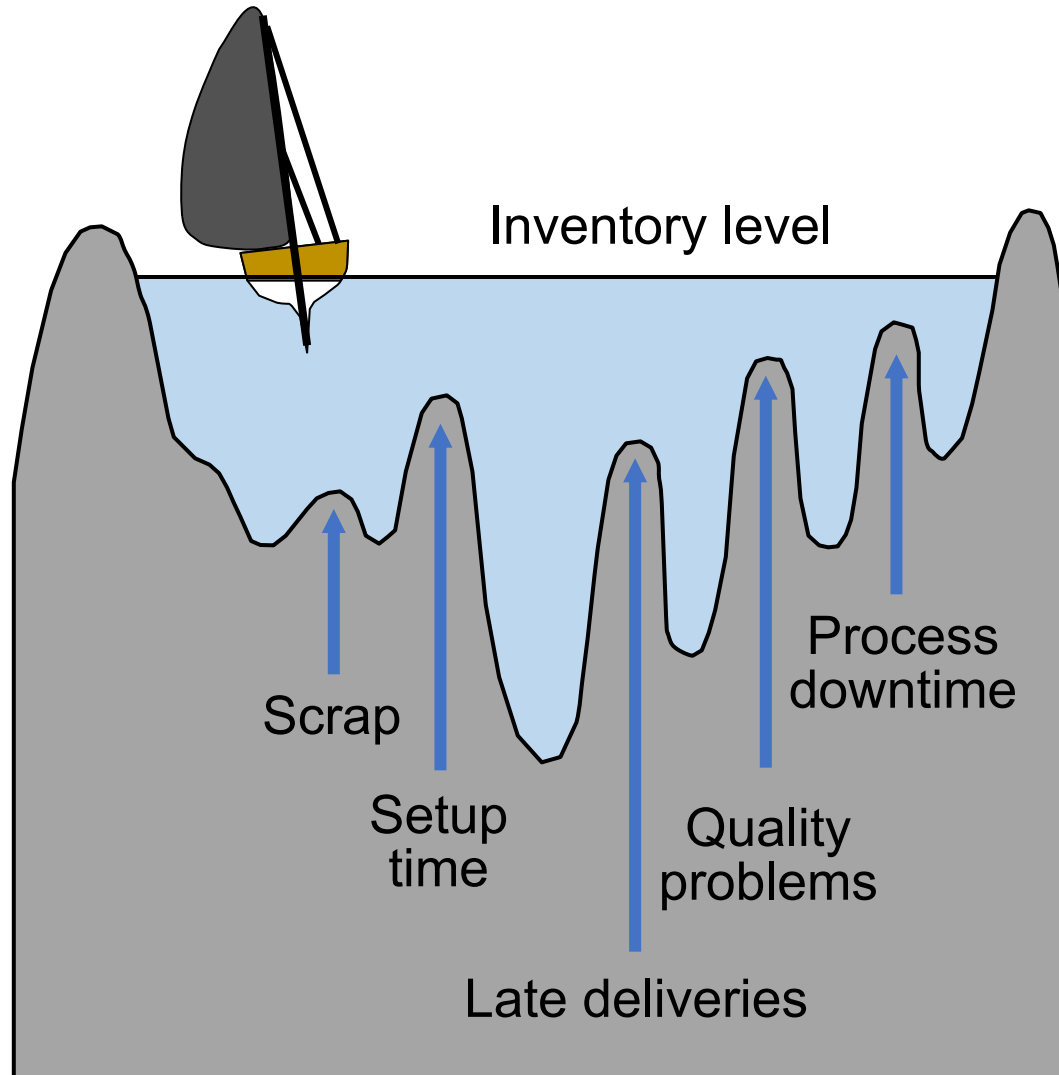
Asiantuntija:
Meillä ei ole riittävästi
resursseja !



Teollisuudessa varastot ovat samaa,
mitä jonot sosiaali- ja terveydenhuollossa

Kun tulee tiukka paikka,
niin karikot tulee esille

Reduce Variability



Reduce Variability

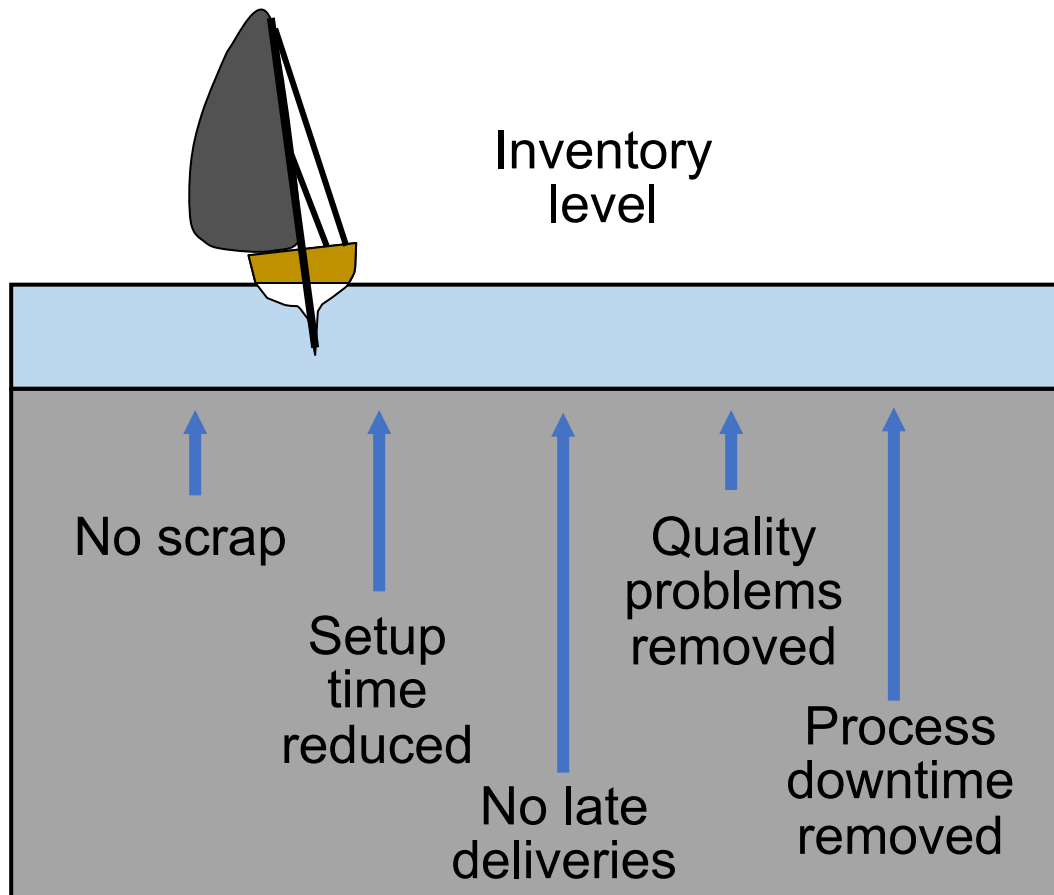
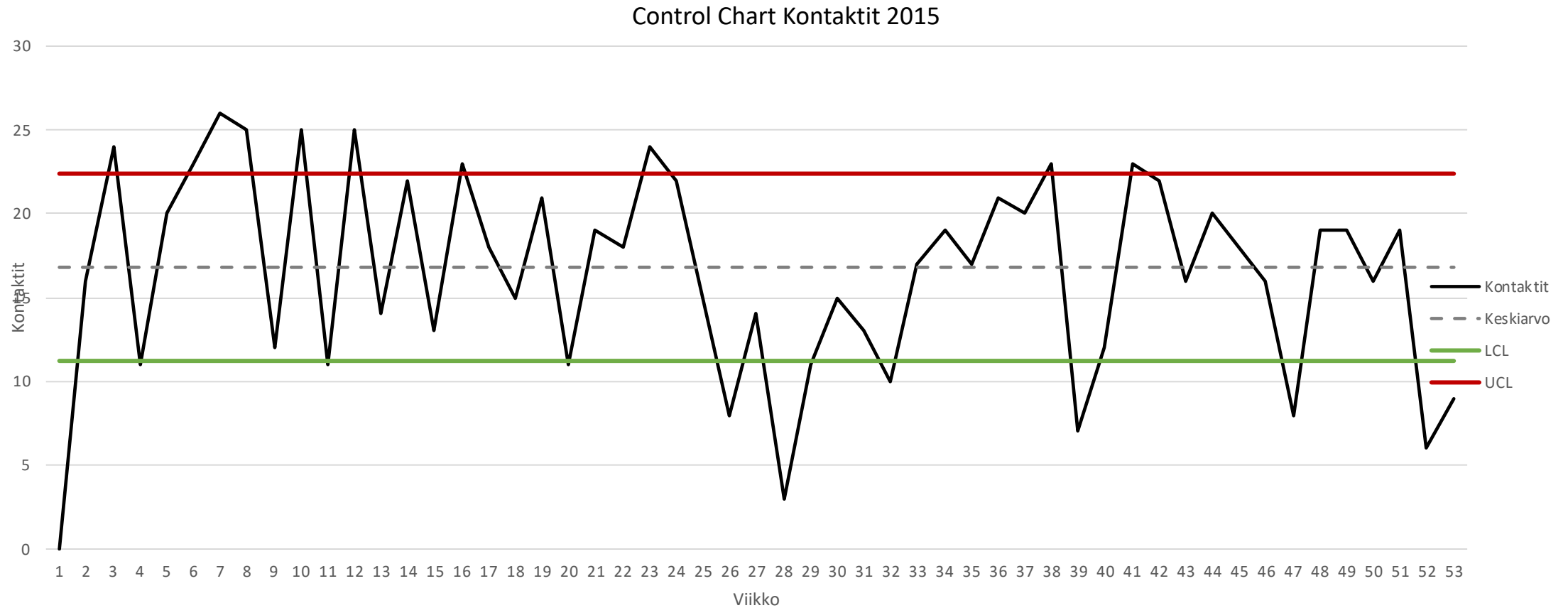


Figure 16.3

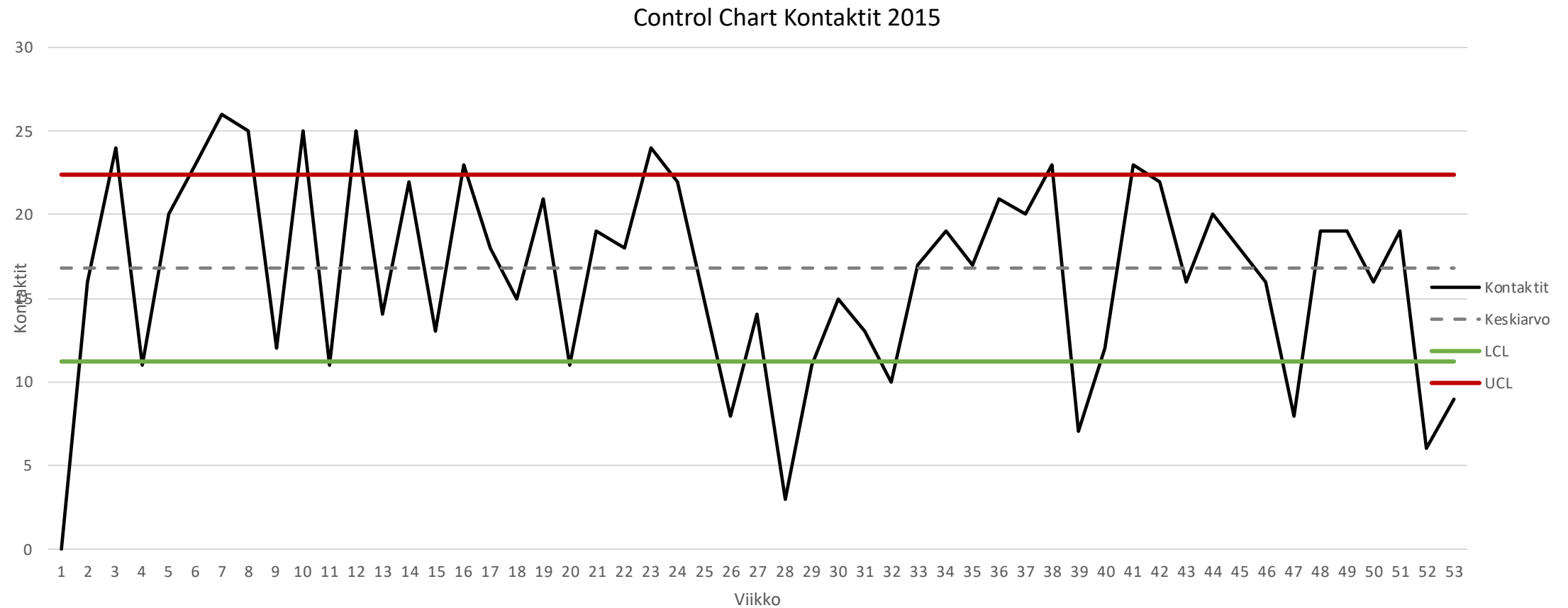
121016 Miepä-keskuksen lukuja – lääkärit vastaanotto 2015

Keskimäärin 17 käyntiä/ viikko?



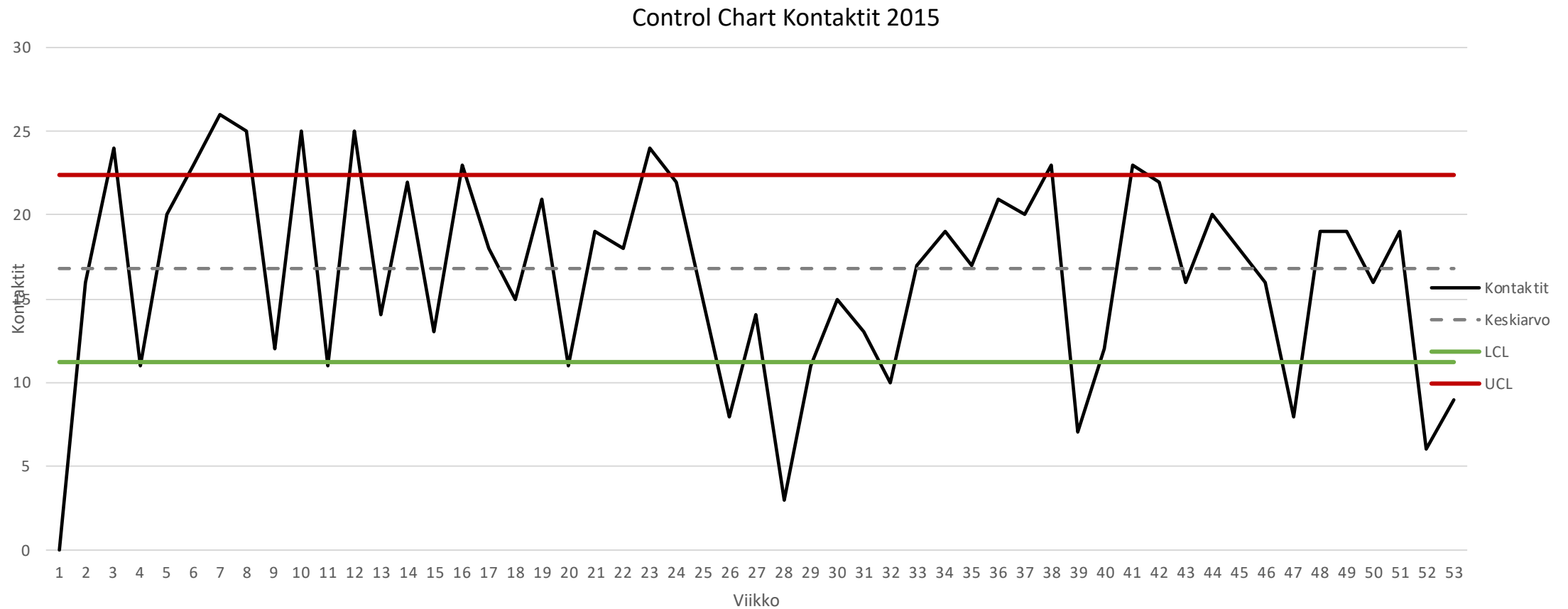
121016 Miepä-keskuksen lukuja – hoitohenkilökunta vastaanotto 2015

**18 potilasta
/viikko?**

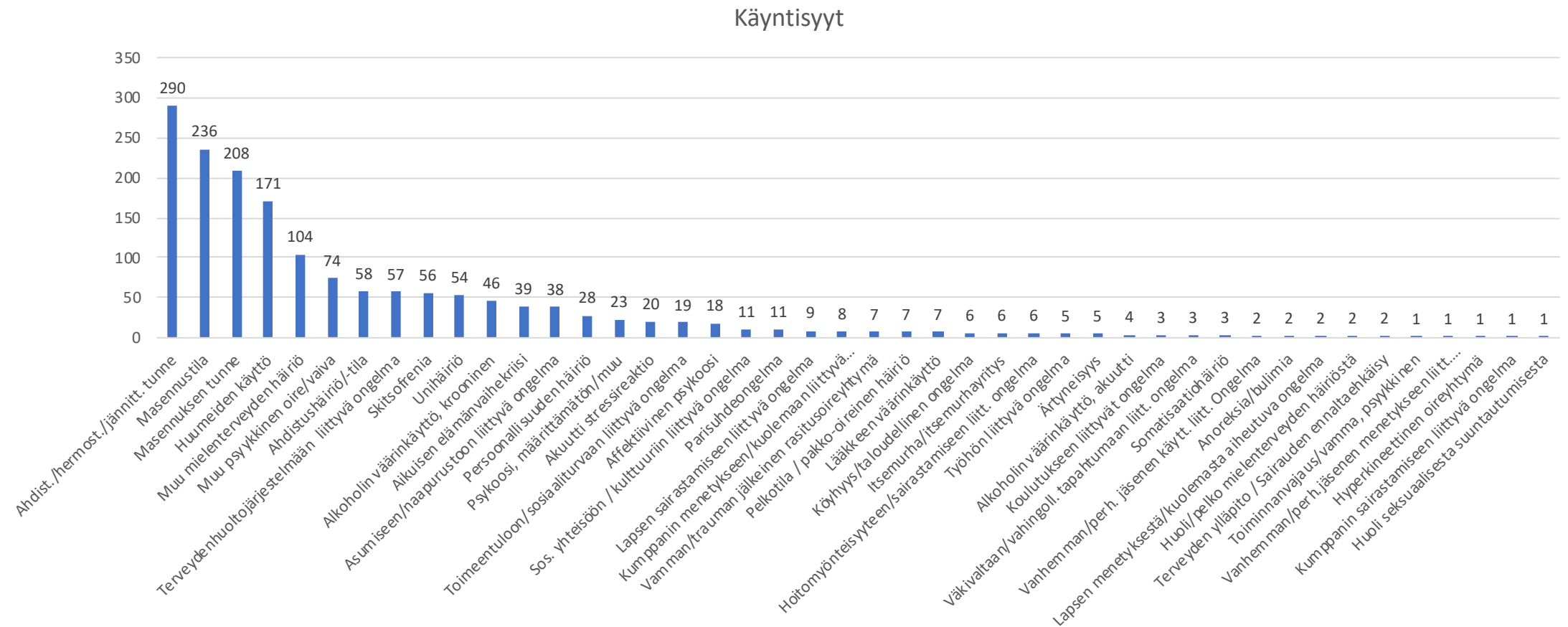


121016 Miepä-keskuksen lukuja – terapeutit vastaanotto 2015

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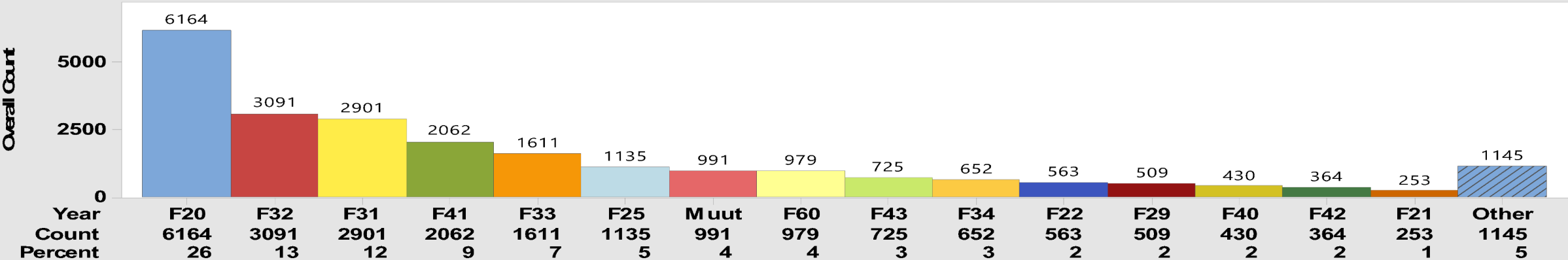
121016 Miepä-keskuksen lukuja 2011-2016 – Efficia-merkinnät - käyntisyyt



2011-2016 Lääkäreiden ja hoitohenkilökunnan diagnoosit

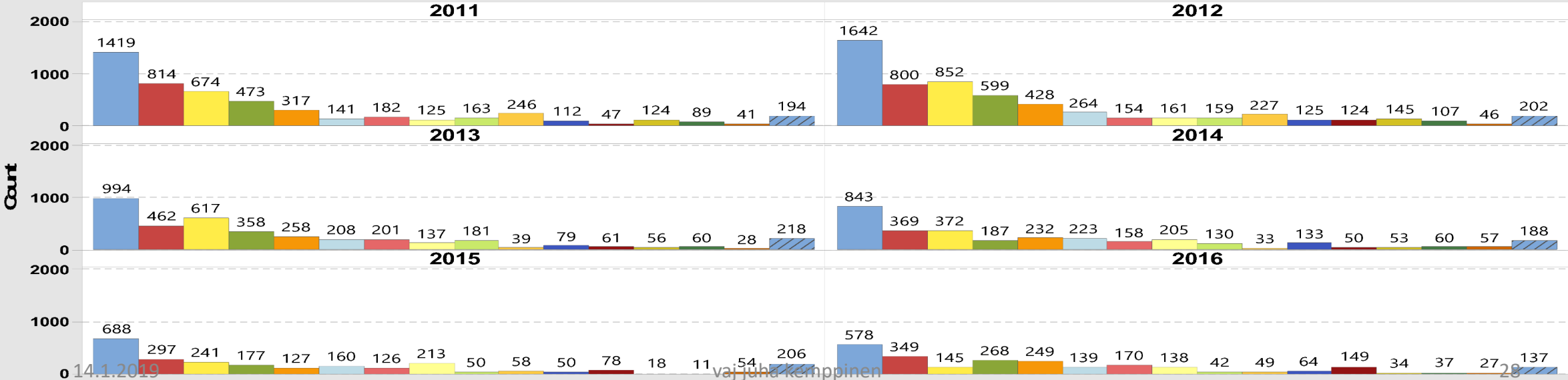
Pareto Chart of Year
Summary Report

Overall

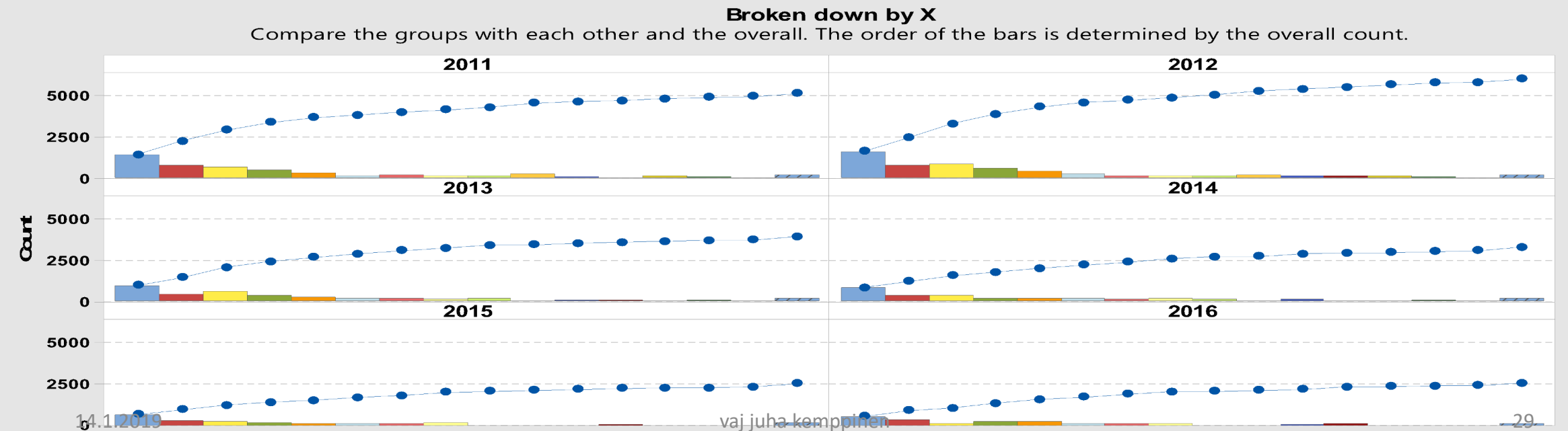
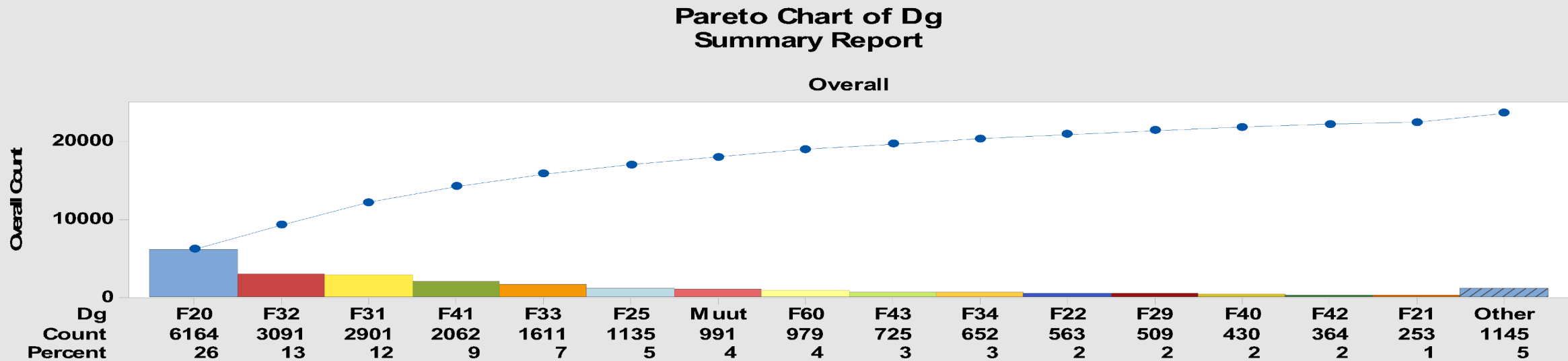


Broken down by X

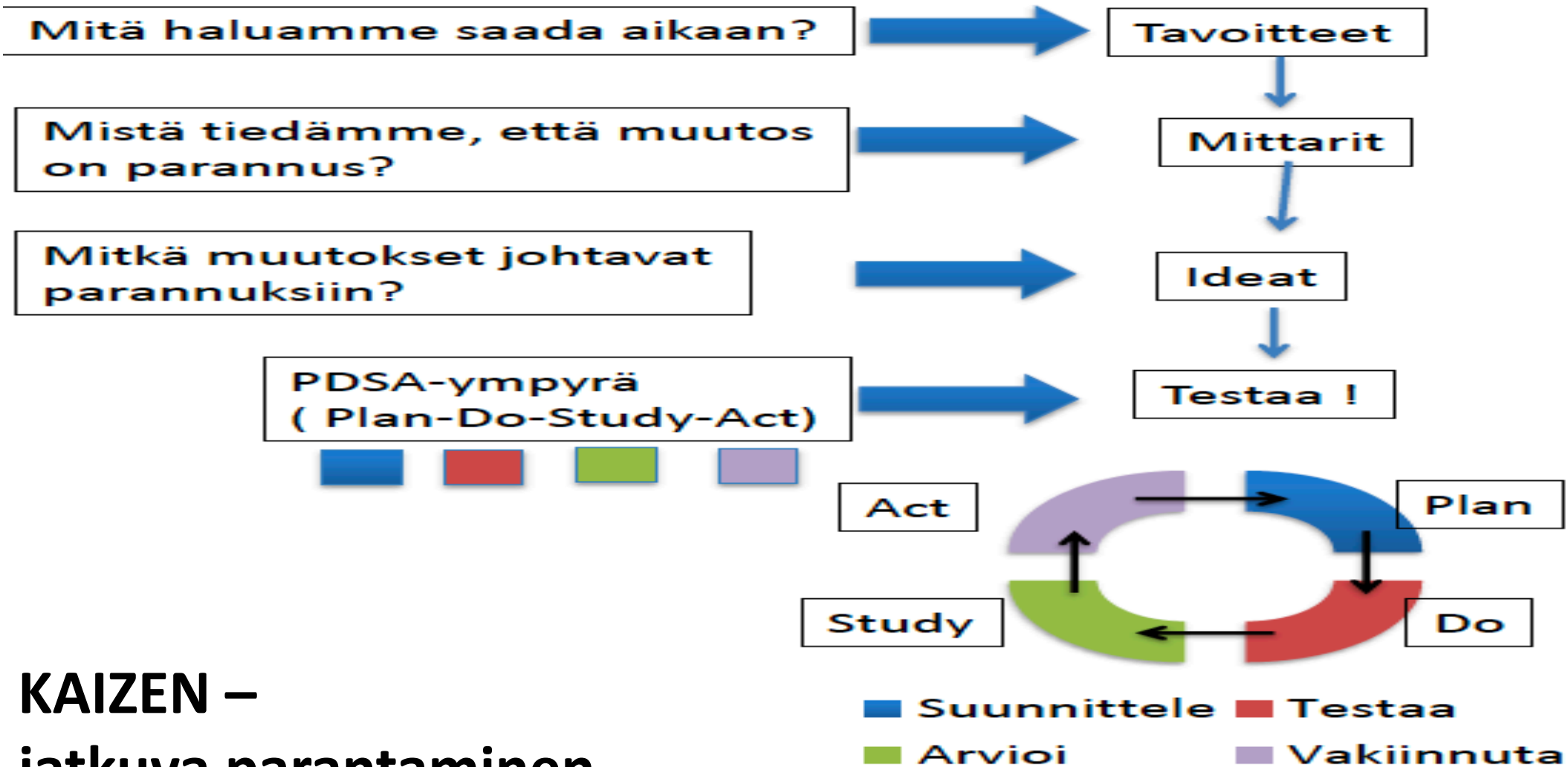
Compare the groups with each other and the overall. The order of the bars is determined by the overall count.



121016 Miepä-keskuksen lukuja 2011-2016 - diagnoosit



Jatkuvan parantamisen malli (T Nolan, E Deming)



**KAIZEN –
jatkuva parantaminen**

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The 5Ss

- ▶ **Sort/segregate** – when in doubt, throw it out
- ▶ **Simplify/straighten** – methods analysis tools
- ▶ **Shine/sweep** – clean daily
- ▶ **Standardize** – remove variations from processes
- ▶ **Sustain/self-discipline** – review work and recognize progress

5-S Implementation

- Promotes visual management and a clean and safe workplace that results in a high level of organization and efficiency

Why work like this?



When you can work like this!

5S Workplace Organization

A safe, clean, neat, arrangement of the workplace provides a specific location for everything, and eliminates anything not required.

- **Sort**
- **Set in Order**
- **Shine**
- **Standardize**
- **Sustain**

COLLEEN'S HARD WORK

BEFORE

AFTER



The 5-S's

- “Straighten” - separating what is and is not needed
- “Sort” - a place for everything, and everything in its place
- “Shine” - a clean workplace should be an established goal
- “Sustain” - adherence to the first three S's in the 5S program
- “Standardize” - continuous use of the first four S's until they become second nature to employees

Just-In-Time (JIT) Technique

- Products produced only as they are required
- Establish flow processes so there is an even, balanced flow throughout the entire production process
- Best suited to processes where the same product is produced continuously
- Goal: Generate zero queues & Minimize lot sizes

Benefits of 5-S

- Increased morale
- Safety
- Non-Value Added activity decreased
- Efficiency and organization
- Increased quality
- Faster Lead Time
- Increased creativity, and willingness to contribute among employees.

JIT: Strategies

- Balanced workload throughout the factory
- Changes in product demand should not result in large fluctuations in production levels
- Establish a TAKT time
- Minimize setup times to achieve single digit times (improved planning & redesigning processes)
- Lead times should be reduced through cellular manufacturing, reducing queue times, etc.

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Visual Controls

Simple signals that provide an immediate understanding of a situation or condition. They are efficient, self-regulating, and worker-managed.



The image shows a visual control board with a grid of tasks, standards, targets, measurements, and actual results. The board is divided into five columns: Elements, Standard, Target, Measurement, and Actual. The rows represent different tasks or processes.

Elements	Standard	Target	Measurement	Actual
Weekly Calendaring No double booking Reservable until 20th Room assignment included Follow up to 14th Booking Zone Task prioritized On site address & directions Agenda & Subcompany printed Daily reminder printed to PDA	→ 95% → 100% → 100% → 50% (max 20) → 100% → 100% → 100% → 100%	→ 95% → 100% → 100% → 50% (7) → 100% → 100% → 100% → 100%	Friday audit by Karl	●
Emails Answered within 24 hours	100%	95%	Friday audit by Karl	●
Standard Travel Packet Booking pass Parking coupon Agenda Emails Hotel confirmation Transportation info	100% (update on sat)	100%	AS needed (on Friday audit by Karl)	n/a
Document Management Quality documentation on site	→ 100% (1st priority) → 100% (2nd) → 100% (3rd)	→ 100% → 100% → 100%	AS needed (on Friday audit by Karl)	●

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Facility Layout:

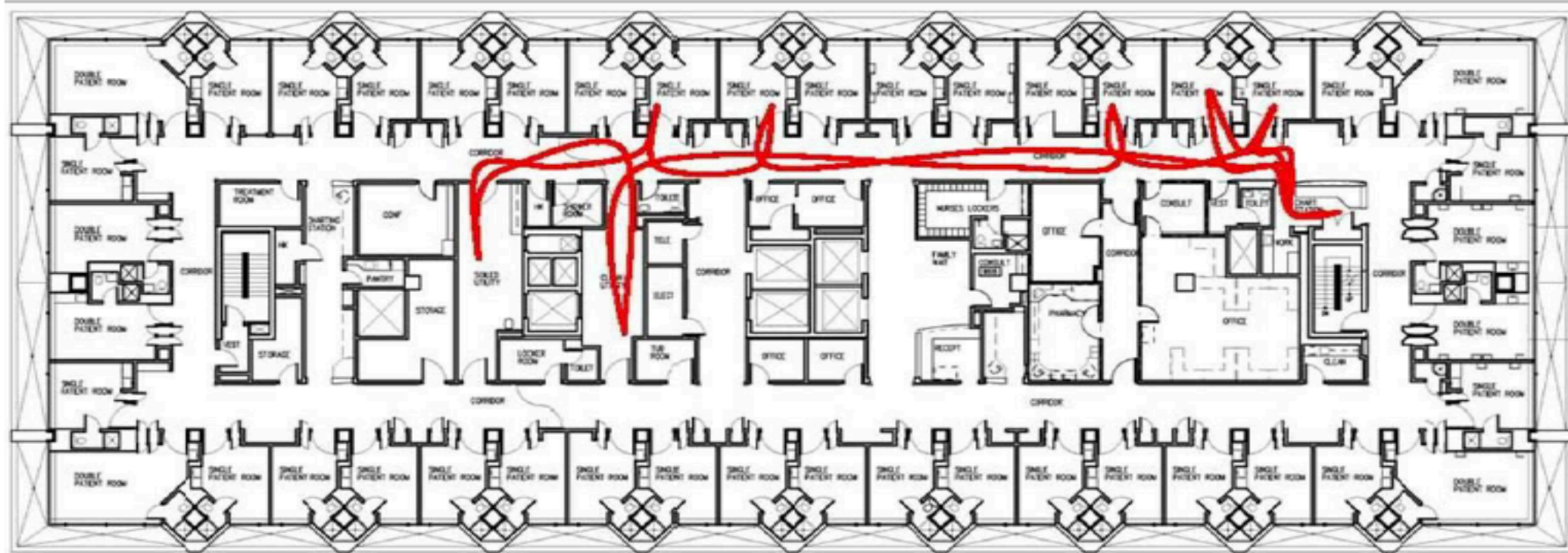
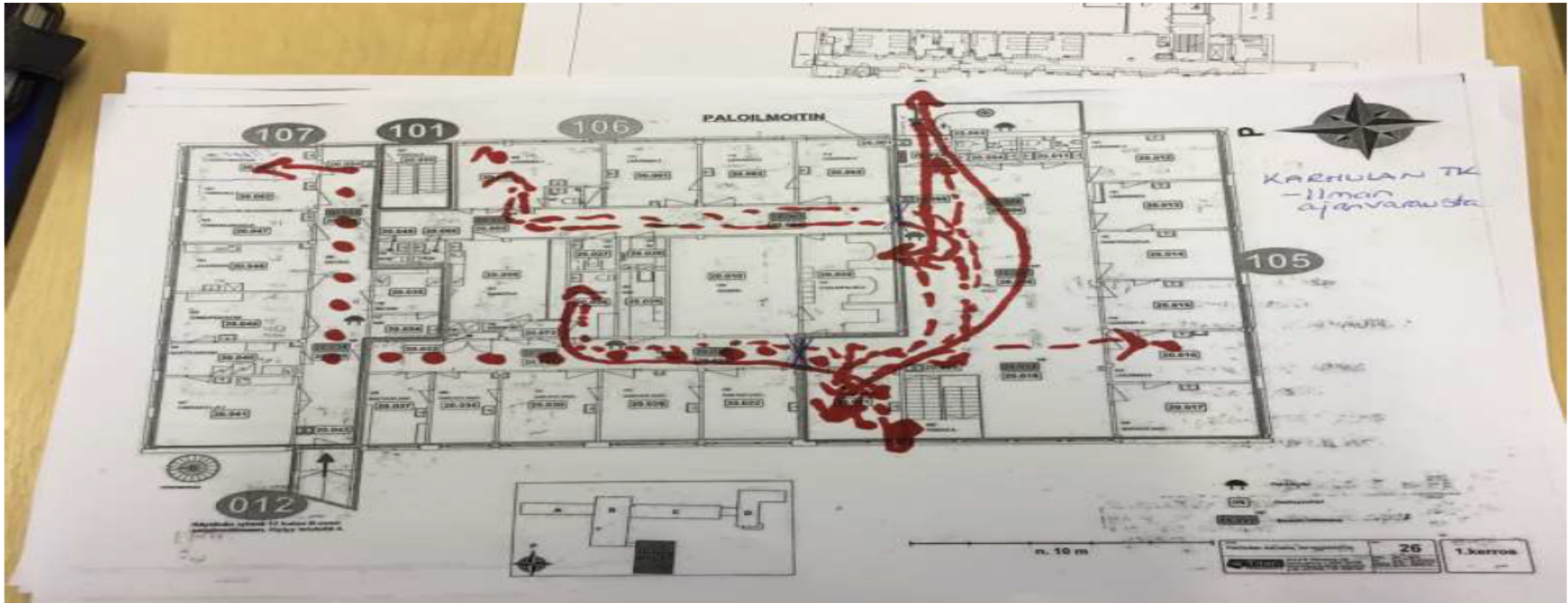


Figure 1. Traditional racetrack configurations distance staff from their patients and one another and increase time spent on non-patient activities.

040216 MIEPÄ-Päihdehoidon ydinprosessit

030116 MIEPÄ-kehittämispäivä
psykiatrian pkl, Lokki



Ryhmä 1: Karhulan terveystaseman nykyinen tapa toimia

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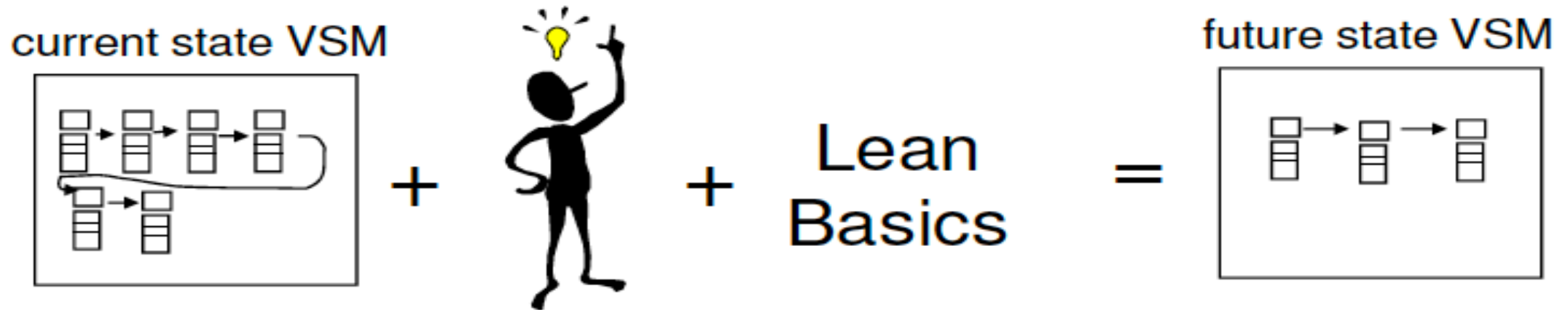
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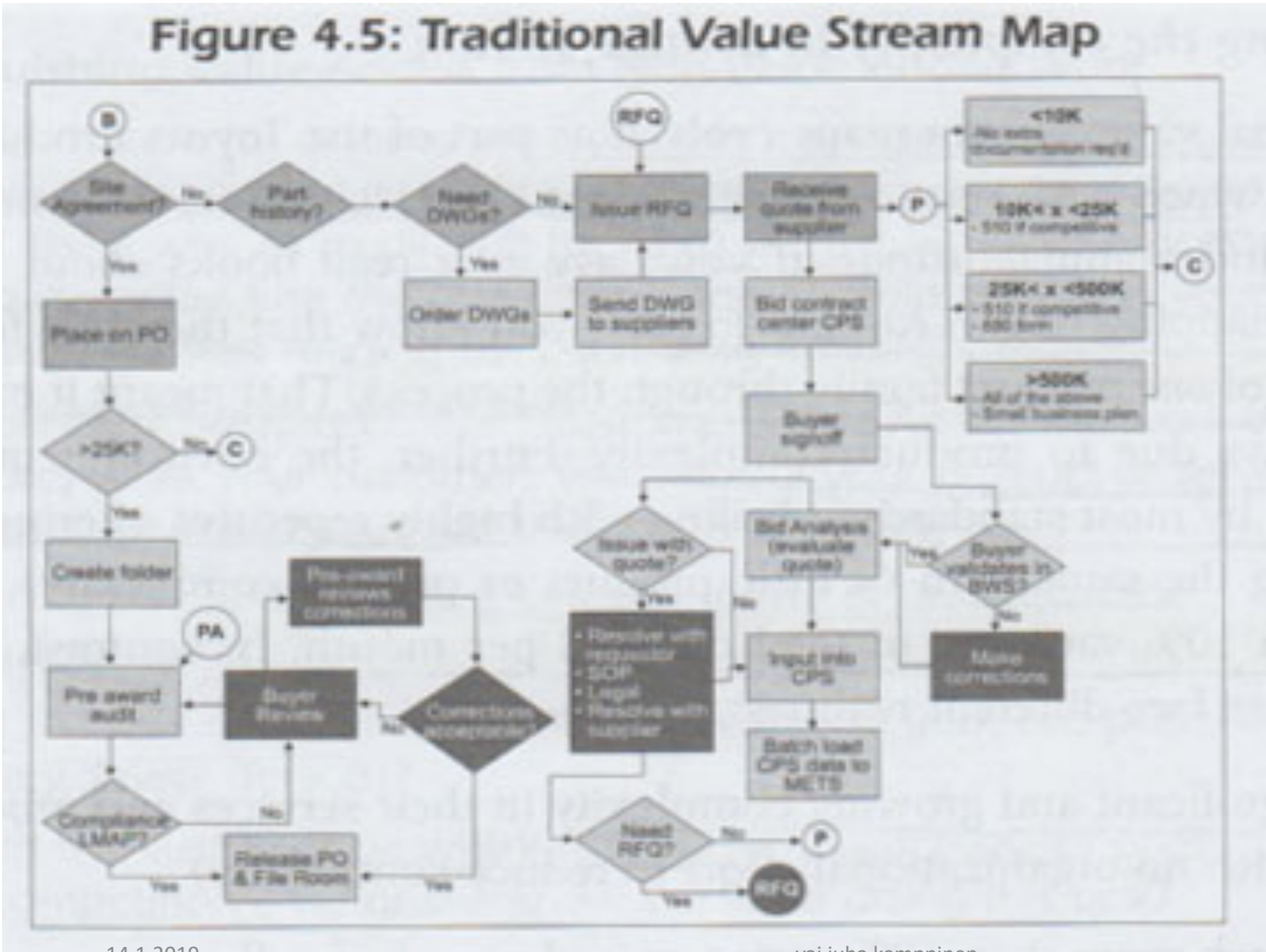
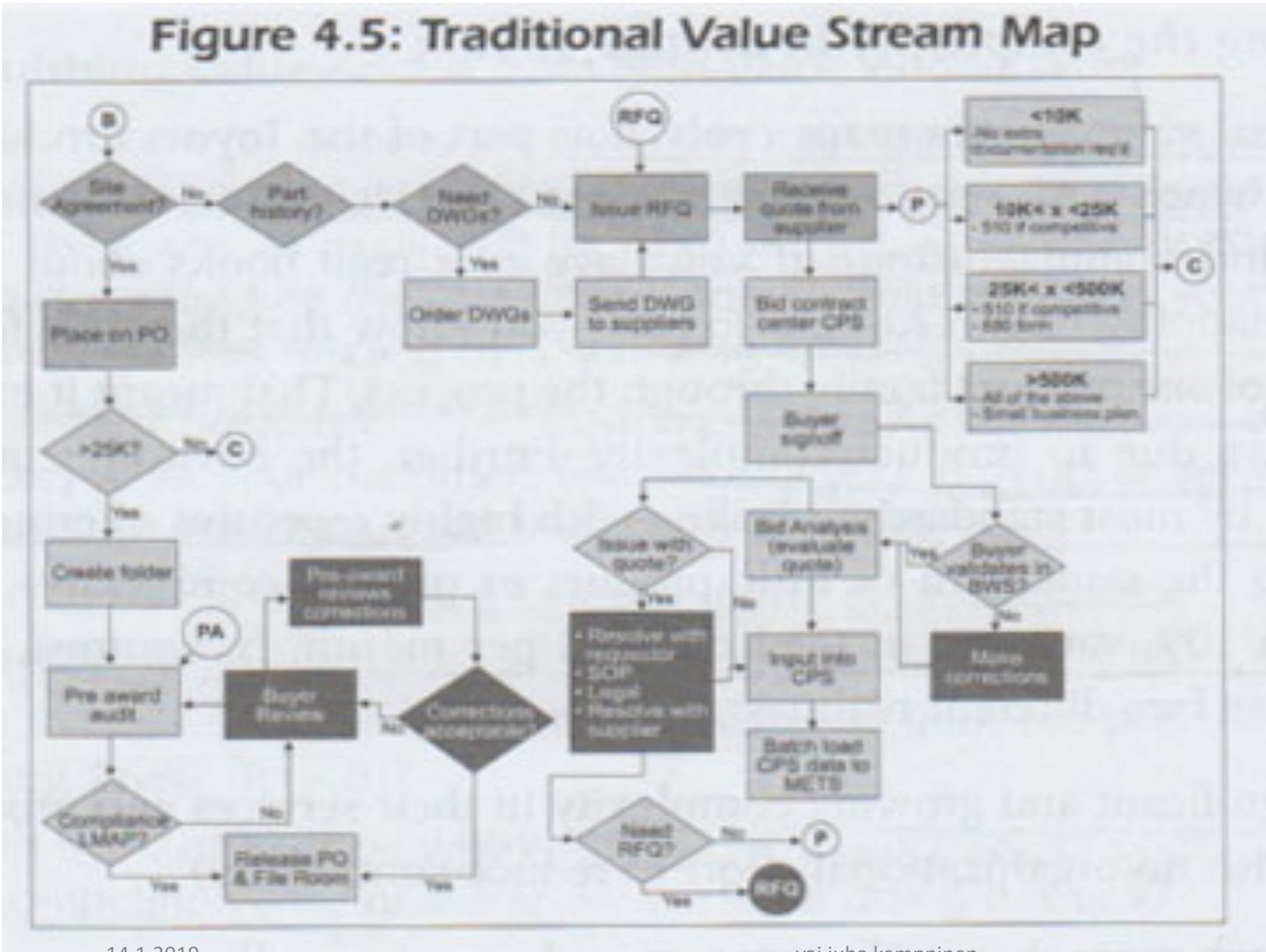
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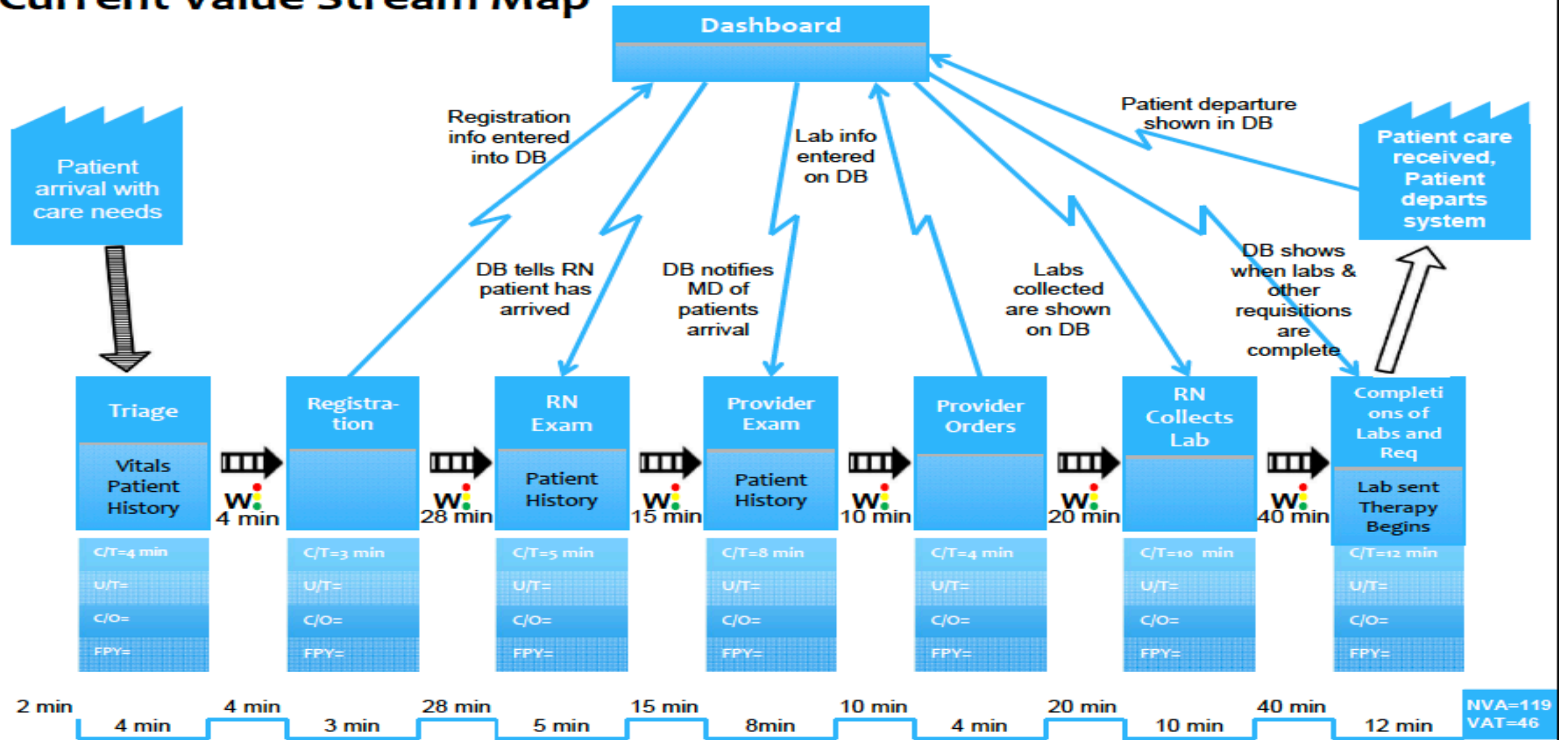
What Is Value Stream Analysis?

Planning tool to optimize results of eliminating waste



[illegible]

Current Value Stream Map



Lead Time = 165 minutes

Steve Lockwood, Introduction to Lean Healthcare, 2013

Process Mapping and Value Stream Mapping Symbols

A selection of useful Process Mapping Symbols

Process Step _____ 

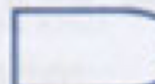
Decision / Inspection Point _____ 

Direction of Flow _____ 

Start / End _____ 

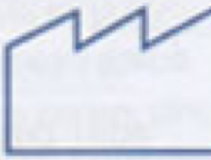
Connector _____ 

Document _____ 

Delay _____ 

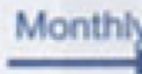
Storage _____ 

A selection of useful VSM symbols:

Customer or Supplier _____ 

A queue of 125 units of inventory _____ 

Physical flow of parts _____ 

Flow of manual information (e.g. forms) _____ 

Flow of electronic information (e.g. EDI) _____ 

A potential improvement project _____ 

An electronic database _____ 

Number of employees _____ 