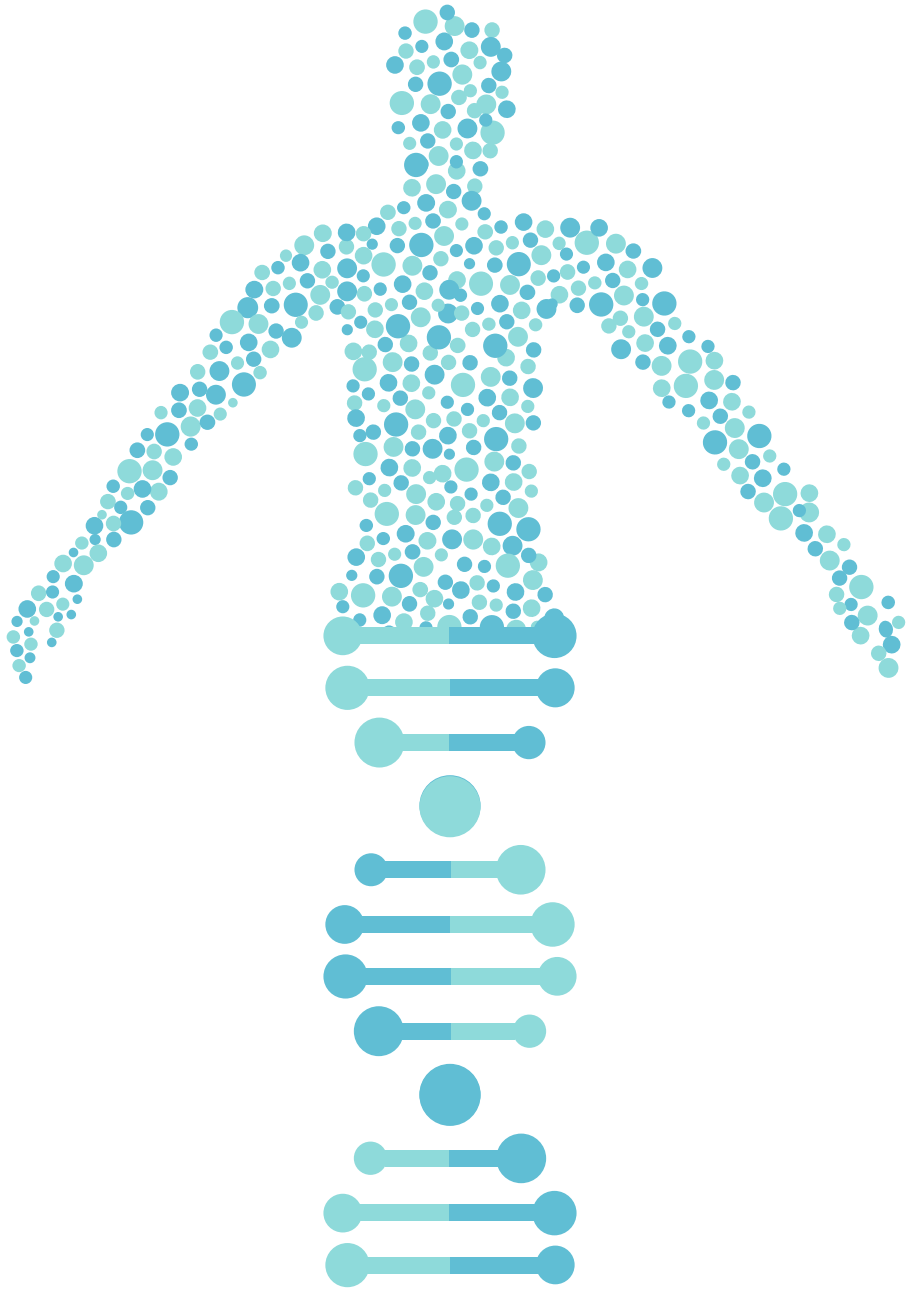
Pneumonia is the 4th leading cause of death worldwide (Marshall et al., 2018)

At SkaS a significant # of pneumonia patients have complex care needs

Healthcare is not adapted to meet the needs of patients with complex care needs



Understanding Healthcare Process:

The case of pneumonia care at Skaraborg Hospital group

Agenda

- Setting
- Aim
- Method
- Empirical findings
- Recommendations & Conclusion

Setting

Skaraborgs Hospital Group
(Skaraborgs Sjukhus, SkaS)

- Four Hospitals: **Skövde, Lidköping**, Falköping Mariestad
- Organizational structure
  - **Skövde**: Specialized wards +MAVA/KAVA
  - **Lidköping**: General medicine wards+ surgery ward

Pneumonia patient group

(2018-2019)

- 2338 pneumonia patients
- 533 had complex care needs
- Located at several different wards
- 2682 pneumonia related episodes

*Complex care needs = having three or more diagnoses concurrently

AIM

" The aim of this thesis is to explore and understand the care process for pneumonia patients at SkaS (Skaraborgs Sjukhus) with an additional focus on patients with complex care needs."

Research questions

RQ 1

What does the pneumonia care process currently look like at Skaraborgs Sjukhus?

RQ 2

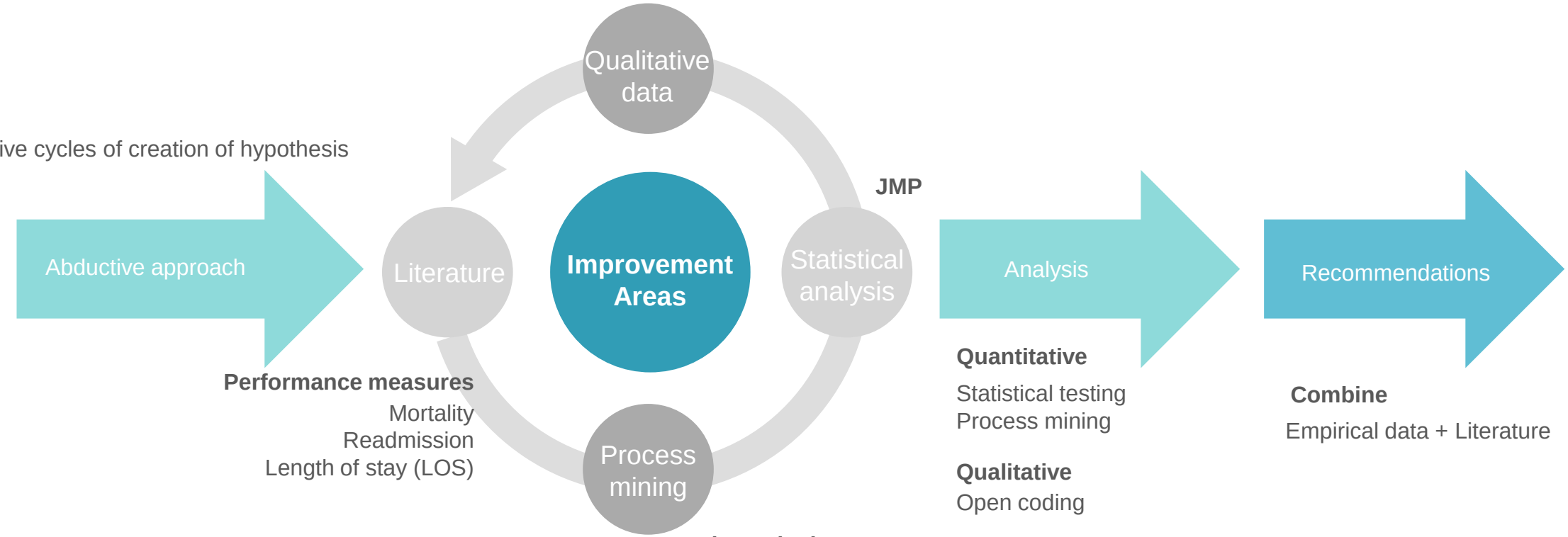
What variables in the pneumonia care process influence the quality of care and performance measures?

RQ 3

What are the areas of improvement in the care process?.

Method

24 Semi-structured Interviews
Care personnel at SkaS:
Physicians, Nurses, support function



Iterative cycles of creation of hypothesis

Abductive approach

Performance measures
Mortality
Readmission
Length of stay (LOS)

JMP

Analysis

Quantitative
Statistical testing
Process mining

Qualitative
Open coding

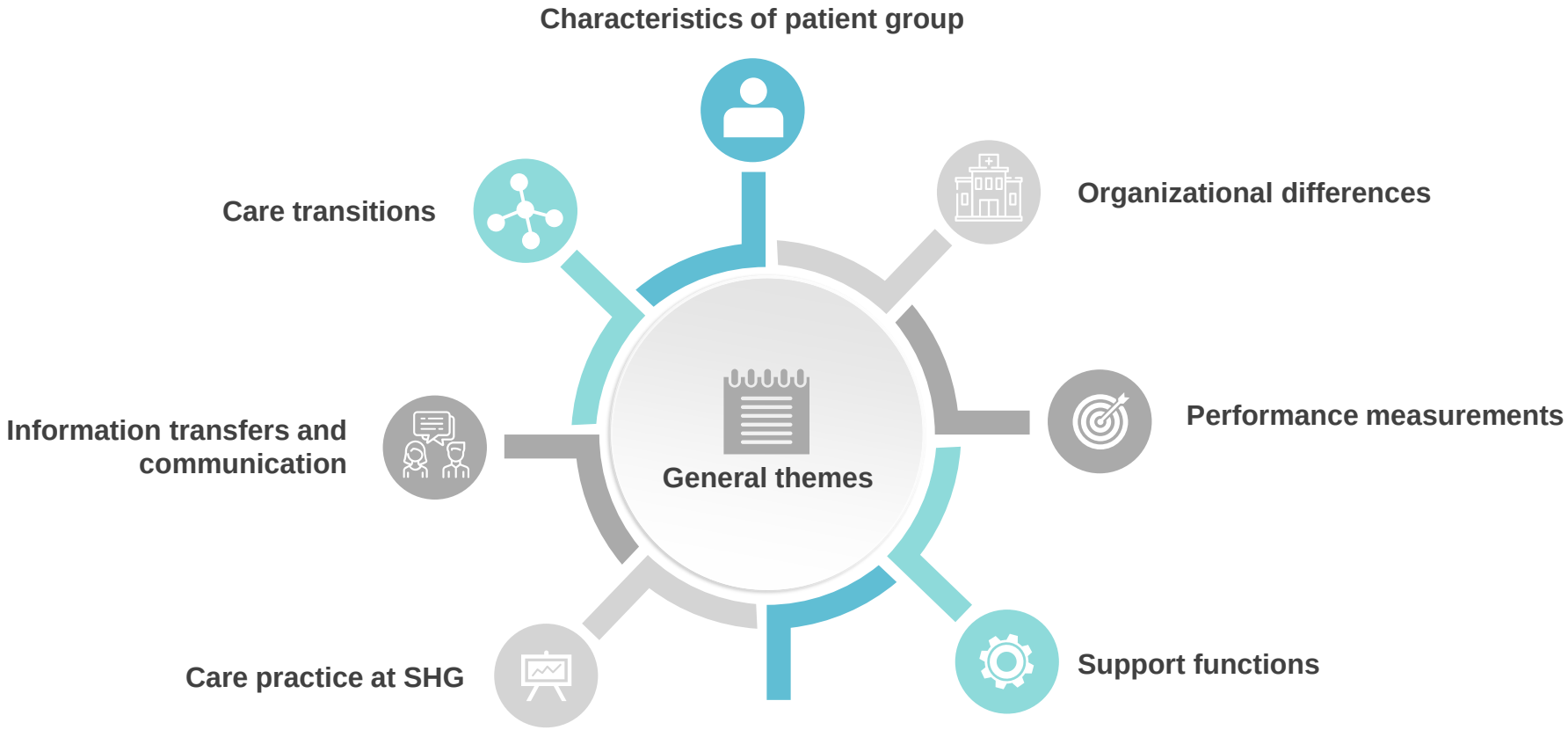
Disco Fluxicon
Process maps with
Data from SkaS

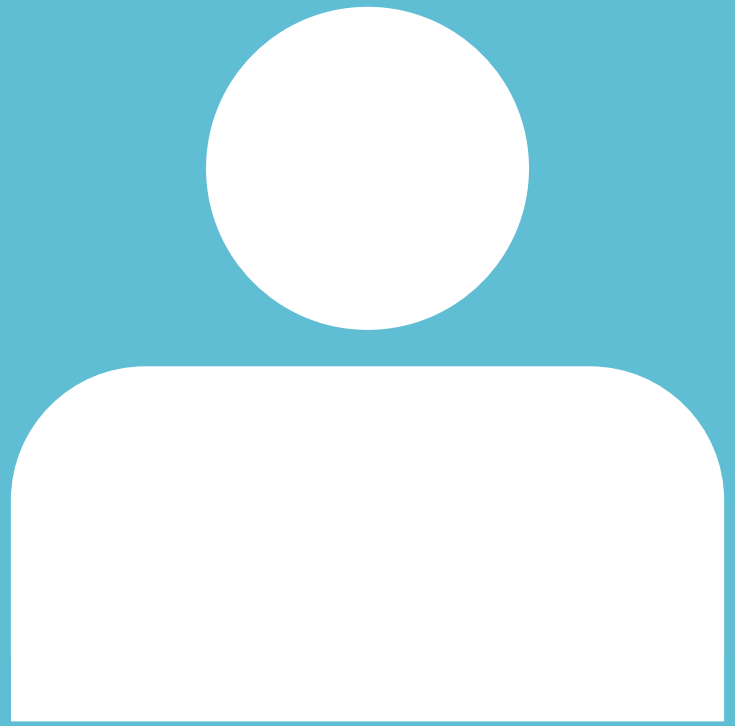
Recommendations

Combine
Empirical data + Literature

SkaS = Skaraborgs Sjukhus

Empirical findings





Characteristics of patient group

Oftentimes they are old and have multiple diagnoses, and they often have underlying illnesses. This can lead to longer care episodes.

(Nurse F)

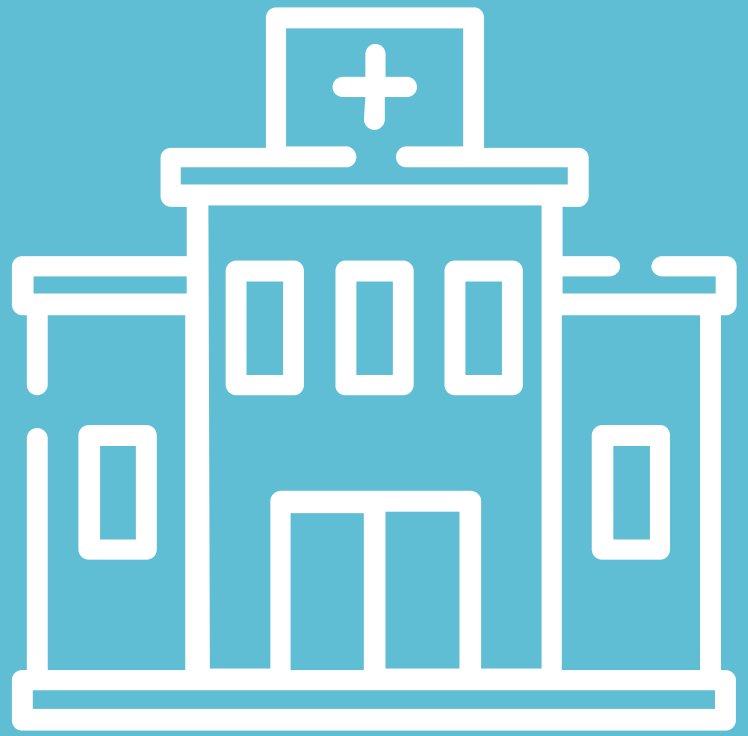
They are a patient group that do not have a speciality care area. They are cared for all over the hospital.

(Nurse F)

Non-complex vs complex

	Non-complex	Complex	Difference	P-value
Proportion of cases moved between wards	0,22	0,28	0,06	0,0005
LOS (Length of stay= vårdtid)	6,69	7,70	1,01	<0,0001
Readmission rate	0,12	0,34	0,22	<0,0001
Mortality	0,10	0,04	-0,06	<0,0001

Organizational differences

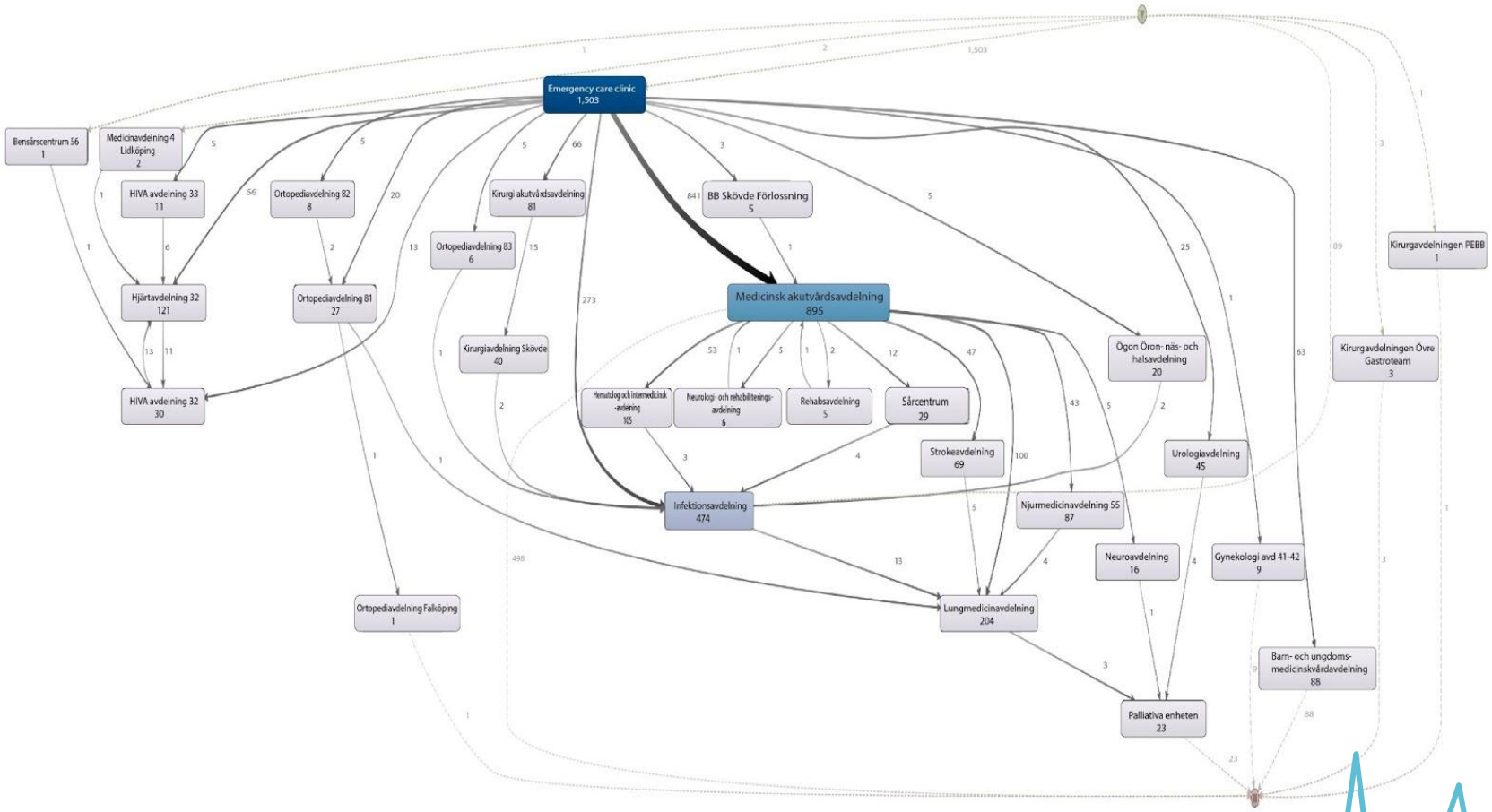


We don't have the same organization as in Skövde where they come to MAVA and then get moved to other wards.

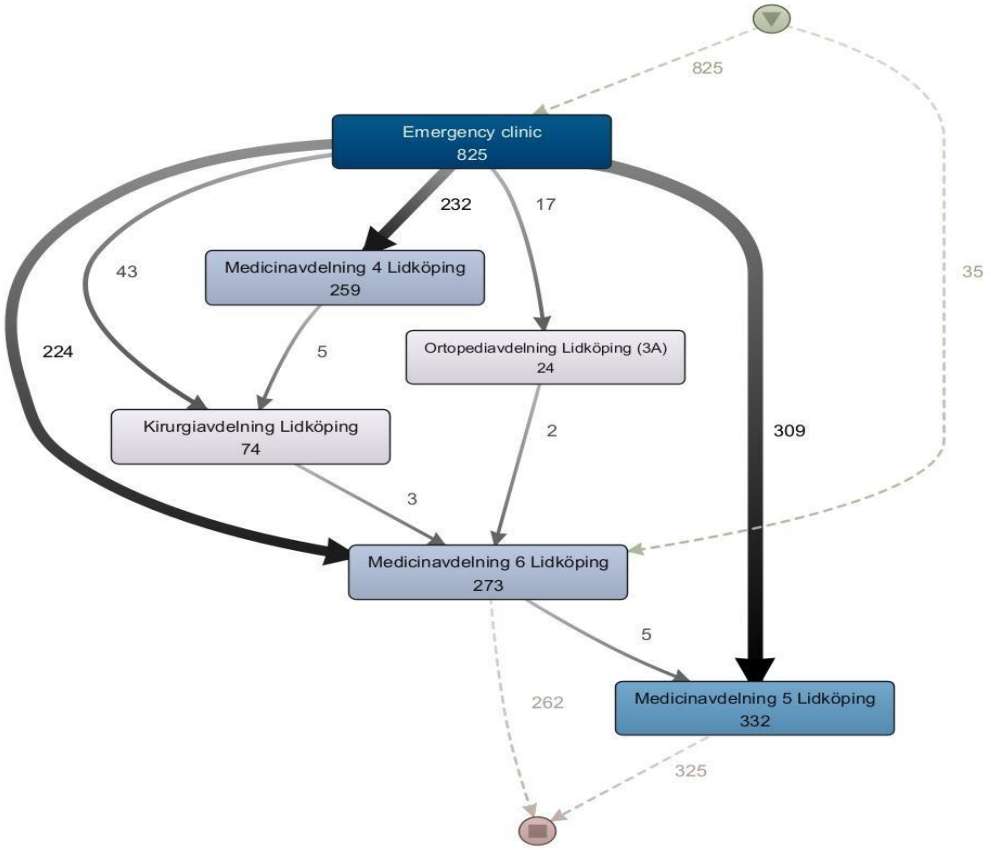
(Nurse H)

MAVA = Medicinsk akutvårdsavdelning

Care network in Skövde …



Vs Lidköping

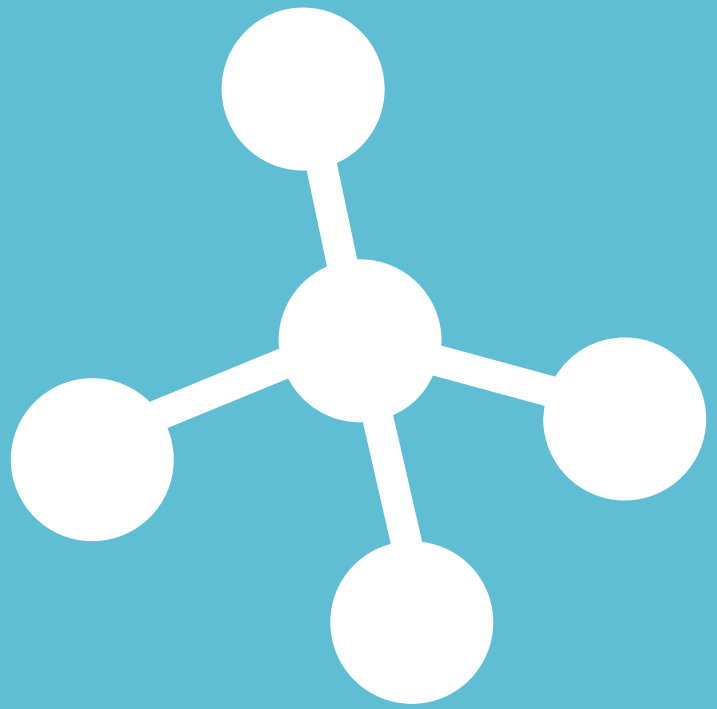


Impact on Length of Stay (LOS)

- Supported by literature *Laing et al., 2004; Menendez et al., 2003; Epstein et al., 2010*
- Significantely (P<0,0001) shorter LOS in Lidköping than in Skövde

	Average LOS
Skövde	7,2 days
Lidköping	6,0 days

Care transitions



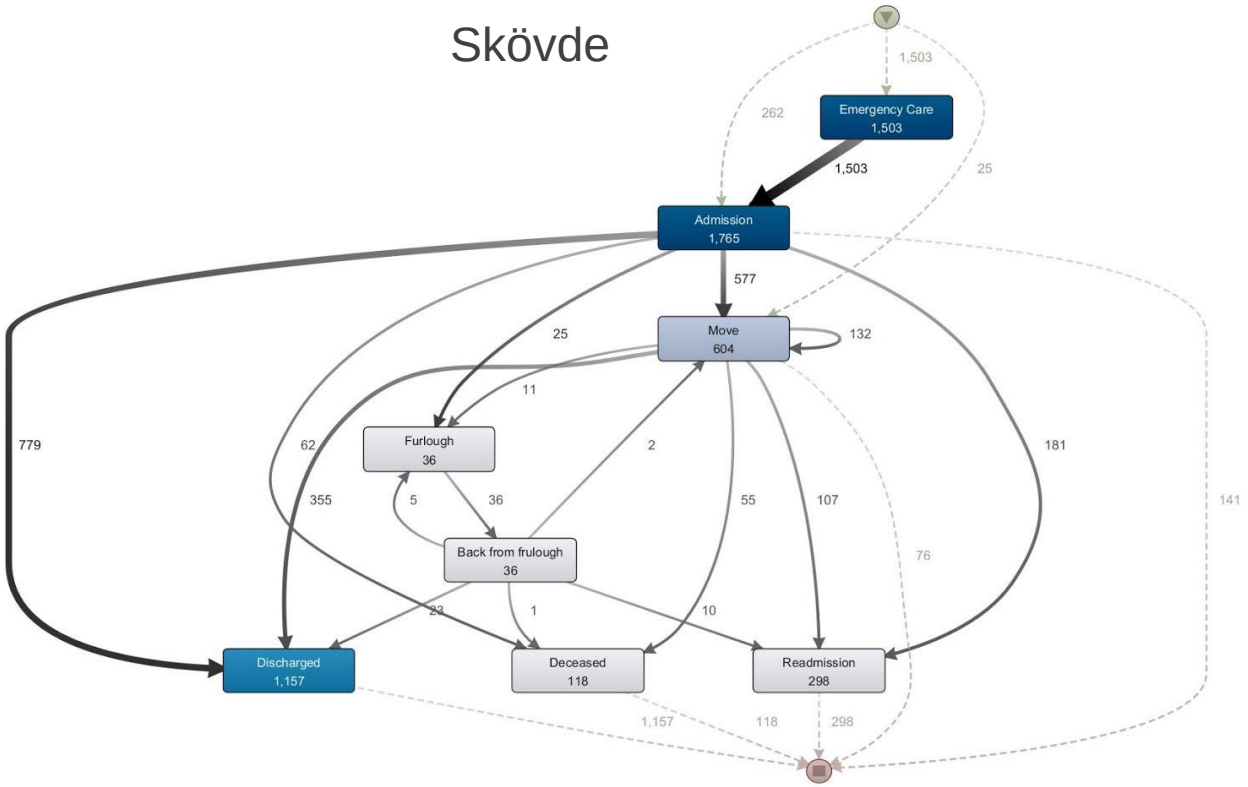
Patients are moved since the care network is organized in highly specialized care units. There are a lot of specialist wards that are specialized in their type of patients. All the patients that have general needs are then moved around between the wards.

(Physician E)

*Care transition = patient move between wards

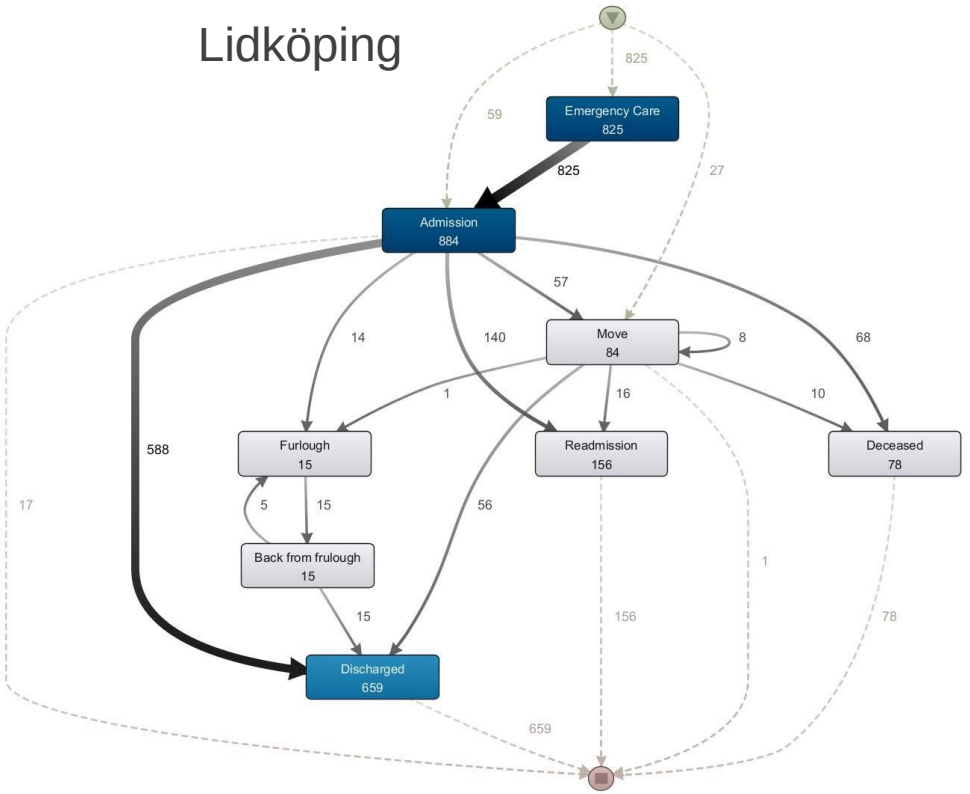
Differences in control flow in Skövde vs Lidköping

Skövde



33% of cases moved

Lidköping



7% of cases moved

Why does care transitions matter?

Moves make the patient confused. It is hard for the personnel to follow up on and have continuity in the care, and it gets difficult to get an overview in progress of the patient's status.

(Physician B)

The length of stay is prolonged because you change physicians and nurses. New personnel need to familiarize themselves with the patient, so for the patient it is never good.

(Nurse J)

Impact on Length of Stay (LOS)

	Cases with no care transition	Cases with care transition	P-value
LOS	5,29	10,96	<0,0001
Readmission rate	0,18	0,20	0,12
Mortality	0,07	0,10	0,005

- Supported by literature *Laing et al., 2004; Menendez et al., 2003; Epstein et al., 2010; Coleman, 2003; Hume et al., 2012; Fuji et al., 2013; Knisely et al., 2015; Wilson & Birch, 2018; De Alba & Amin, 2014; Jack et al., 2009; Hansen et al., 2013; Marks et al., 2013*

Not all care transitons can be avoided

- Many care transitions can be avoided through the organizational structure, but probably not all.
- Economical aspects and lack of resource are other factors for care transitions taking place.
- *What do a well functioning care transition involve?*

Information transfer & communication

- Variation, inefficiency, reduced quality of care

  (Coleman et al., 2006; Coleman, 2003)

Information transfer & communication

> *This system is highly dependent on the individual employee and is thus a source for variation in quality.*
>
> *(Physician A)*

> *I feel like we often have to do double work, both documenting the information in text and giving an oral brief. I would prefer if it was only done in text, so that everyone can read up on the case and everyone gets the same information.*
>
> *(Nurse D)*

Performance measurements

- How do the different factors interact?

Impact on performance measurements

Y = Length of Stay		
Factor	*Estimate*	*P-value*
Move between wards	4,81	<0,0001
Age	0,03	<0,0001
Hospital	0,55	0,03
Complex	0,43	0,10
Gender[K]	-0,15	0,20

Y = Readmission rate		
Factor	*Estimate*	*P-value*
Complex	0,22	<0,0001
Age	-0,0007	0,08
Move between wards	0,03	0,20
Gender[K]	0,007	0,38
Hospital	0,006	0,74

Y = Mortality		
Factor	*Estimate*	*P-value*
Age	0,002	<0,0001
Complex	-0,06	<0,0001
Gender[K]	-0,01	0,03
Move between wards	0,02	0,11
Hospital	0,002	0,88

Care practice at SHG

“There aren't any particular guidelines for pneumonia that I know of.”

(Physician D)

- No general guidelines to guide the care
- <u>Literature:</u>
  Longer LOS: *(Laing et al. 2004; Menendez et al., 2003)*
  Higher readmission rate: *(De Alba & Amin, 2014; Lindenauer, 2010; Epstein et al., 2011*

Support Functions

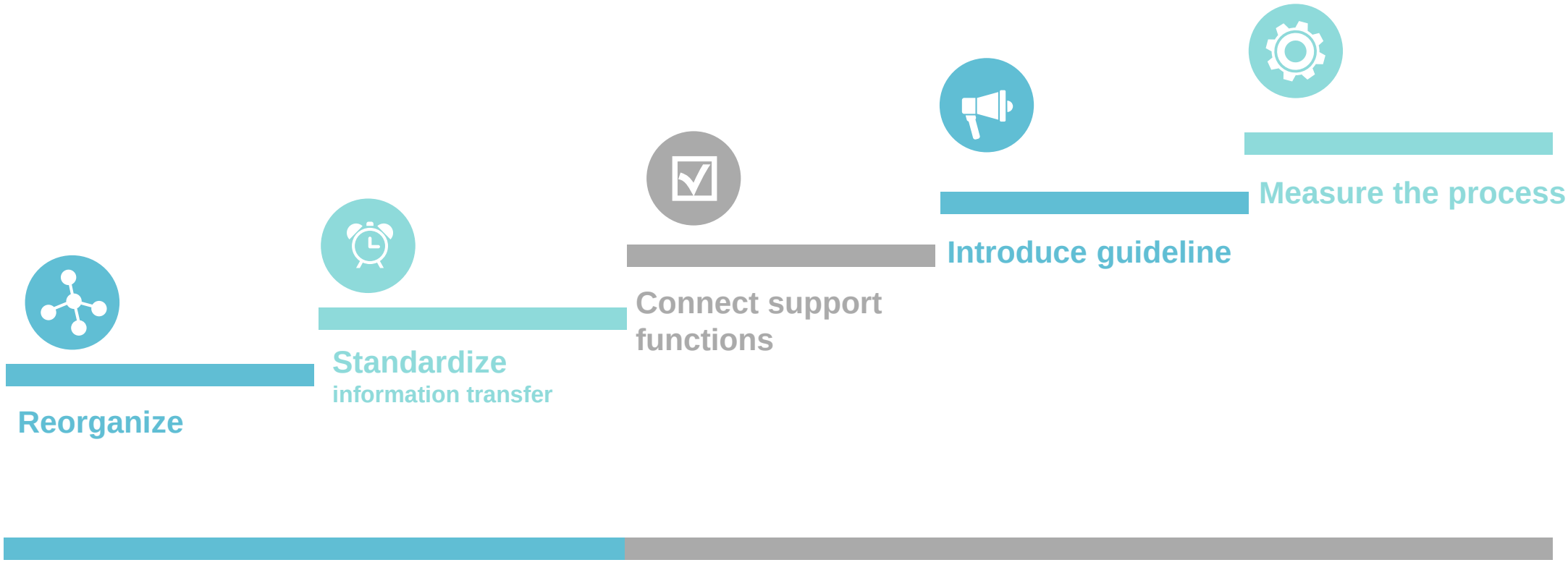
Regarding breathing exercises, there are people who can manage it well by themselves, but it is up to us to see to that it gets done. I don't think it is only because of staff shortage this gets down-prioritized and is missed, but also because we lack a good routine to rely on, who is responsible and how we should work with this.

(Nurse H)

… I can imagine that it varies between departments and between cases to cases and depending on who works. I do not think we have a clear document to follow.

(Physician G)

Recommendations



Reorganize the hospital organization

- General Medicine ward, provide “home ward” for pneumonia patients
- Improved integration of care network
- Reduced # of Care transitions as seen in Lidköping
- Reduced Length of Stay (LOS), freeing up resources, reduced costs

(Laing et al., 2004; Menendez et al., 2003; Epstein et al., 2010; Wilson & Birch, 2018; De Alba & Amin, 2014)

Standardize information transfer

➢Now: quality of information highly dependent on the writer

Improved transitional care affects:

- Length of stay (LOS) (Epstein et al., 2010; Escobar et al., 2010)
- Readmission rate (Coleman, 2003; Hume et al., 2012; Fuji et al., 2013; Knisely et al., 2015;Wilson & Birch, 2018; De Alba & Amin, 2014; Jack et al., 2009; Hansen et al., 2013; Marks et al., 2013)
- Improved quality of care (Coleman et al., 2006)

Integrate and connect support functions to the pneumonia care process

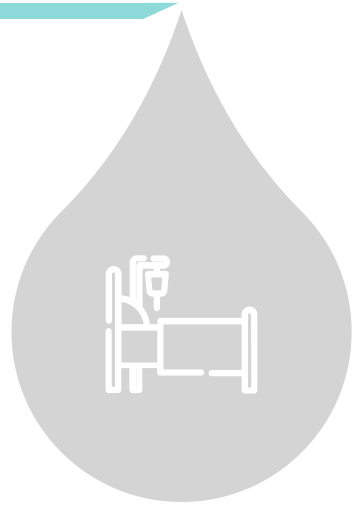
- Plan resource utilization
- Improve knowledge regarding value and use of Support Functions

Increase use of physiotherapy → Reduced Length Of Stay

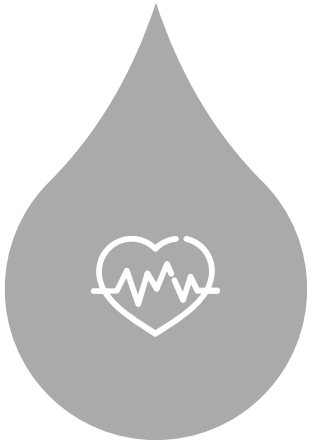
Introduce a Clinical Pathway for pneumonia care

- **Involve “local champions”** (Rotter et al., 2019)
- **Integrate the guideline in the work**

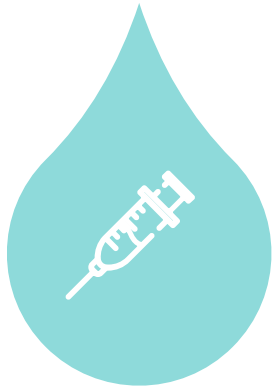
Improvements at SÄS (literature)



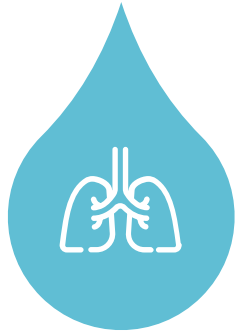
Reduced Length of stay
(Rotter et al., 2019; Hauck et al., 2004; Nicasio et al., 2010; Meehan et al., 2001)



Reduced Mortality
(Hauck et al., 2004; Dean et al., 2001; Meehan et al., 2001)



Reduced time to 1st antibiotic dose
(Hauck et al., 2004; Benenson et al., 1999)



Increased physiotherapy usage

Measure the process

Collect and use data to evaluate the pneumonia care process and continuously improve it

Create baseline for CPW and set goals(Holweg et al., 2018)

Aspects to measure: # of patients that have gotten to see a physiotherapist, time to the first antibiotic treatment, LOS, readmission rate, mortality rate.

Pneumonia care process characteristics

- Unstructured process
- No consensus of treatment
- Organization has impact on quality of care
- Care is affected by care practician
- Complex care needs affect quality

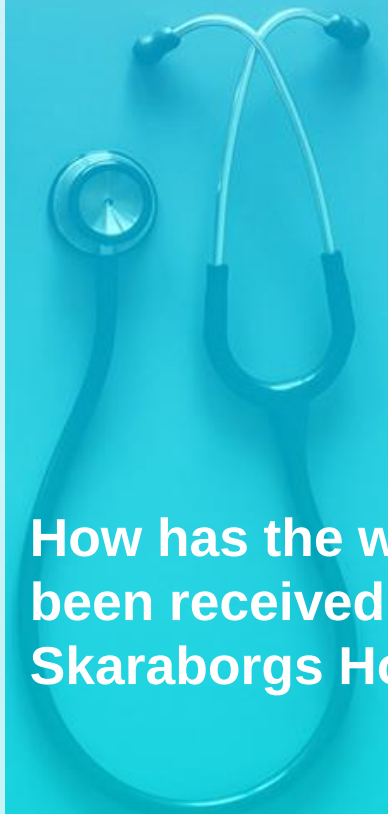
Variables affecting performance

- Organizational structure
- Care transitions
- Differences in care practice
- (CPW) Guideline in place
- Mobilization of patients
- Age
- Complexity of care needs

Improvement areas

- Reorganize hospital
- Standardize information transfer
- Integrate and connect support functions
- Introduce a guideline (Clinical Pathway, CPW)
- Measure the process

Conclusion



How has the work been received at Skaraborgs Hospital?

Thank you for listening!

Questions?