

EHMA 2024

Shaping and managing
innovative health ecosystems

**Rethinking patient flow improvement to rapidly reduce
length of stay for improved access and affordability of care**

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Agenda

- 1** A Common Challenge (Context)
- 2** Key Measurements and Results (Results)
- 3** How: Overview of Key Principles (Methods)

Appendix: References

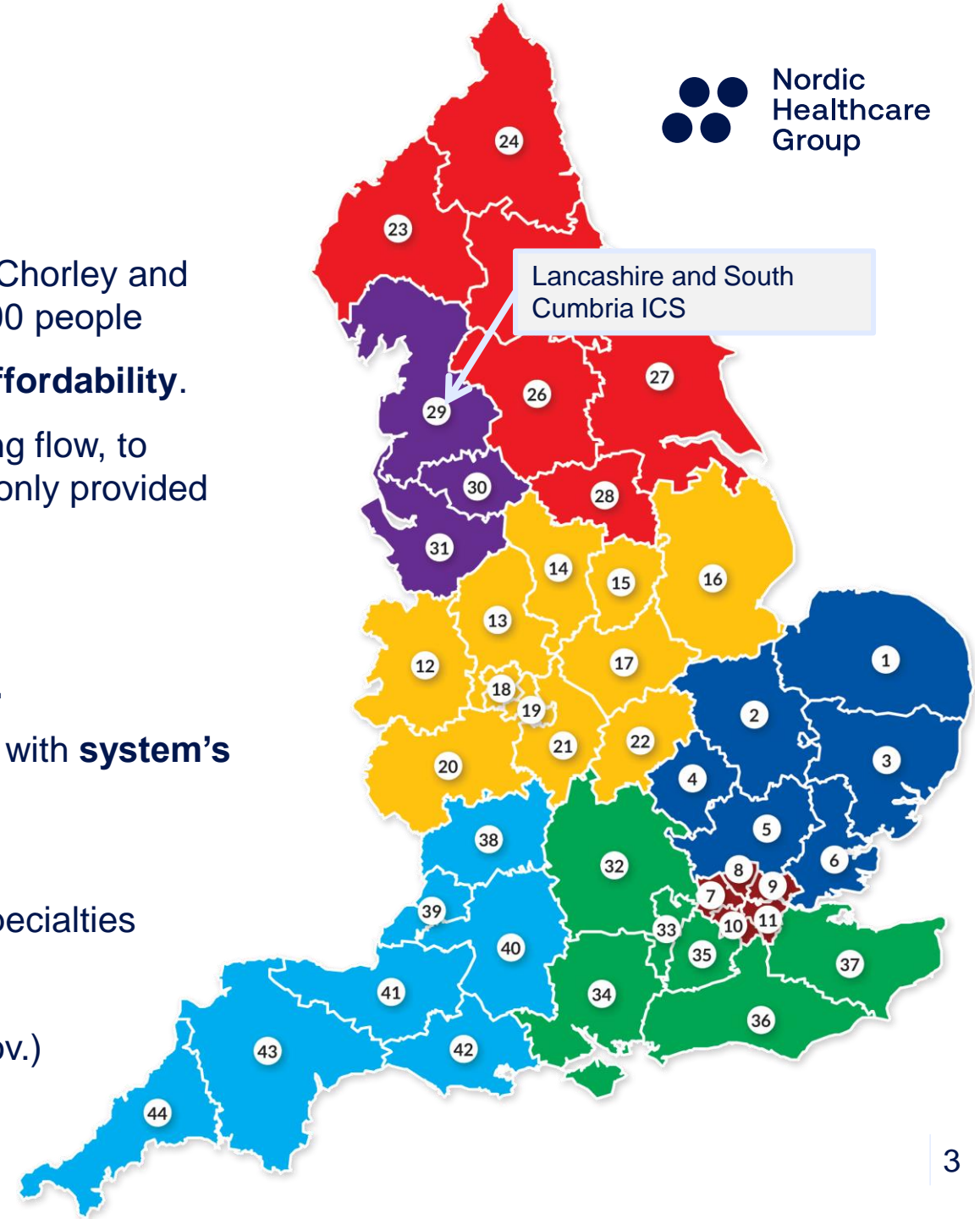
Lancashire Teaching Hospitals (NHS), UK

Context and challenge

- The Trust operates two hospitals: Royal Preston Hospital and Chorley and South Ribble Hospital (~900 beds), serving an area of 350,000 people
- **Facing significant pressure to improve both access and affordability.**
- Many approaches/methodologies and technologies to improving flow, to reduce length of stay and free up capacity, had been tried but only provided limited results

Identifying what to improve for the greatest overall benefit..

- ..by combining a **patient-centred** and **clinically led** approach with **system's thinking**
- A methodology enabled by patient flow software
- Pilot: 10 wards / ~300 beds, involving many different clinical specialties
- Staggered implementation carried out in Aug-Oct. 2023
- The results presented here cover a ~10 week period (Sept.-Nov.)



The four core measurements of patient flow

Results from Lancashire Teaching Hospitals Trust (LTHTR), 10 weeks after the start of the implementation

1. **Patient throughput** (the rate of admissions and discharges)
2. **Finished length of stay (FLOS)**: average LOS of patients who were discharged
3. **Active length of stay (ALOS)**: average LOS of patients still in the system
4. **Delay**: By how many days are individual patients delayed beyond what is needed for their clinical recovery, and why?
 - **Improvement potential**: e.g. bed days lost to delay / lost patient throughput due to delay
 - **Focus**: identifying and resolving which task by which resources that most often causes the most disruption an delay to the most patients?

+13%

-16%
(1 day)

-25%
(2.5
days)

2,600
bed days
/ month

~480
patients

Applying the Theory of Constraints (TOC) to a healthcare environment

The core of TOC

“In goal-oriented systems of dependent activities, each experiencing variation (such as health and social care),..

.. there will be, in fact, only a few places limiting the performance of the entire system:

the system ‘constraints’.”

-Dr. Eliyahu M. Goldratt

Two critical patient flow questions

Applying the Theory of Constraints to a healthcare environment

1



Of all the things we could improve, which one should we improve first?

Focus

2

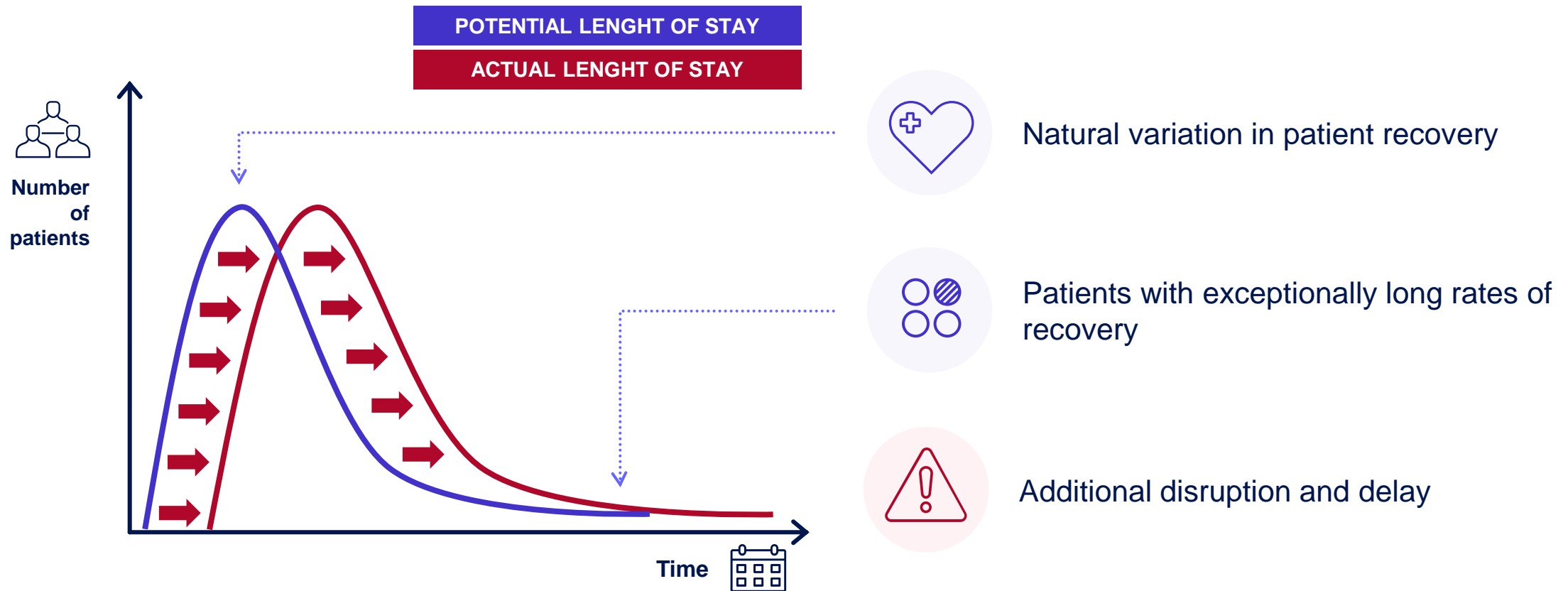


Of all the patients I could work on next, which one should I work on next (when acuity isn't the determining factor)?

Synchronize

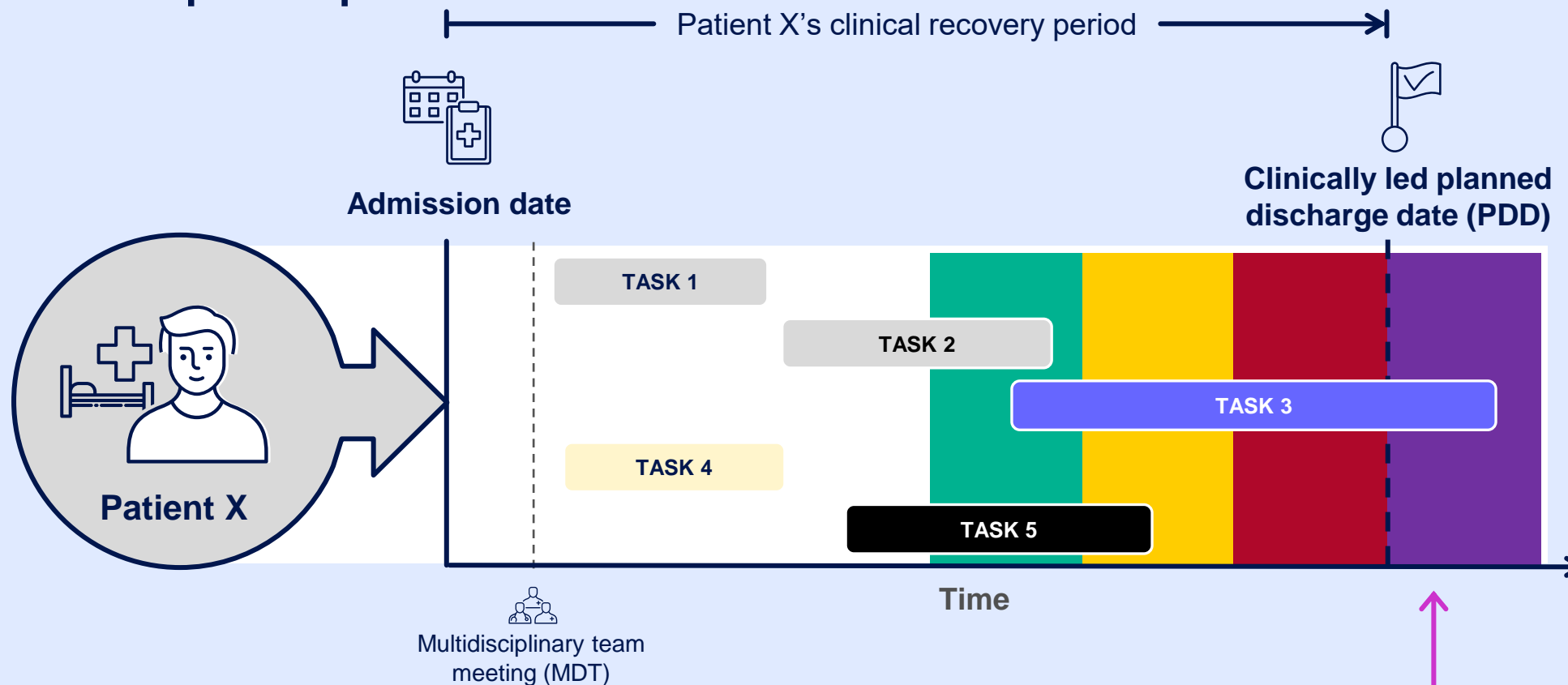
We start by being patient-centred: accepting that every patient is different and their clinical recovery time will vary

Length of stay = individual patients' recovery time + delay caused by the way the system operates



How do we identify and eliminate the unnecessary disruption and delay?

A time-based patient plan



Clinically led planned discharge date (PDD) = a patient-centred, clinically based discharge date, assuming no disruptions or delay.

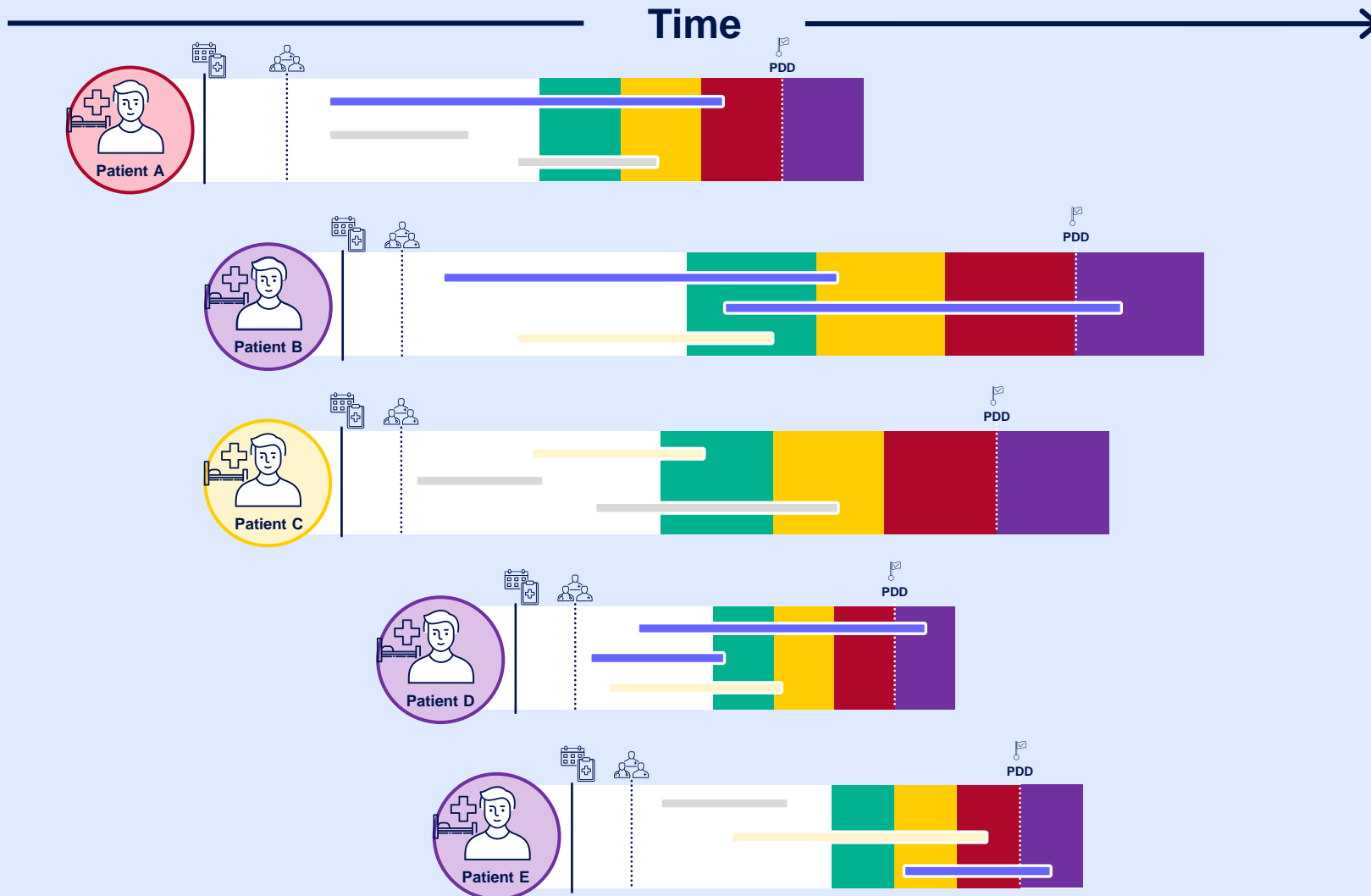
In setting the PDD, NO disruptions or delay, such as a patient having to wait for a task to start due to availability issues, are included. The PDD is set individually for each patient and updated if it changes for clinical reasons.



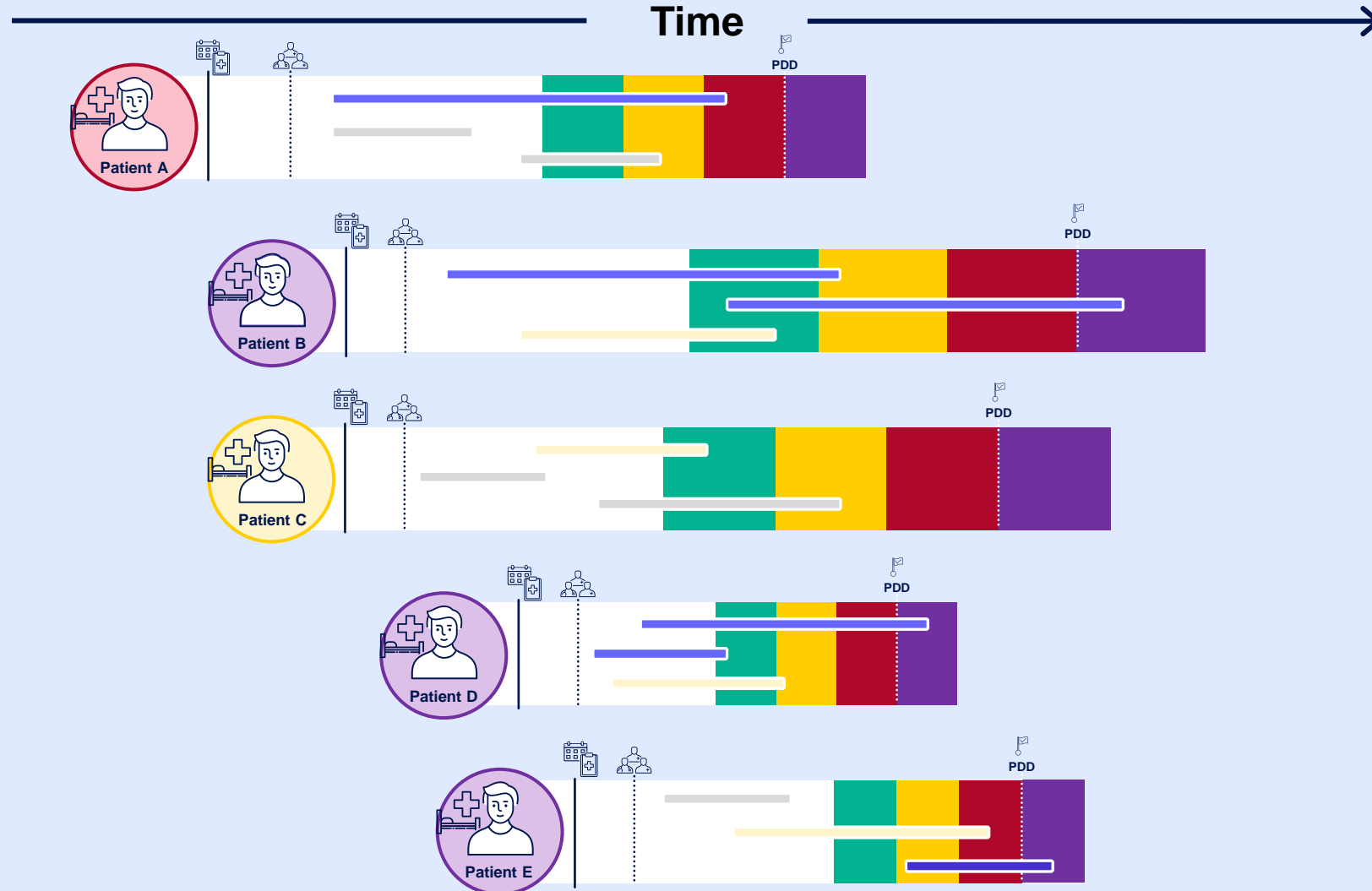
Opportunity identified through a **currency of delay** measured in **time**.

Identifying which task by which resource that most often is the source of most delay across the most patients

Applying the approach to many patients

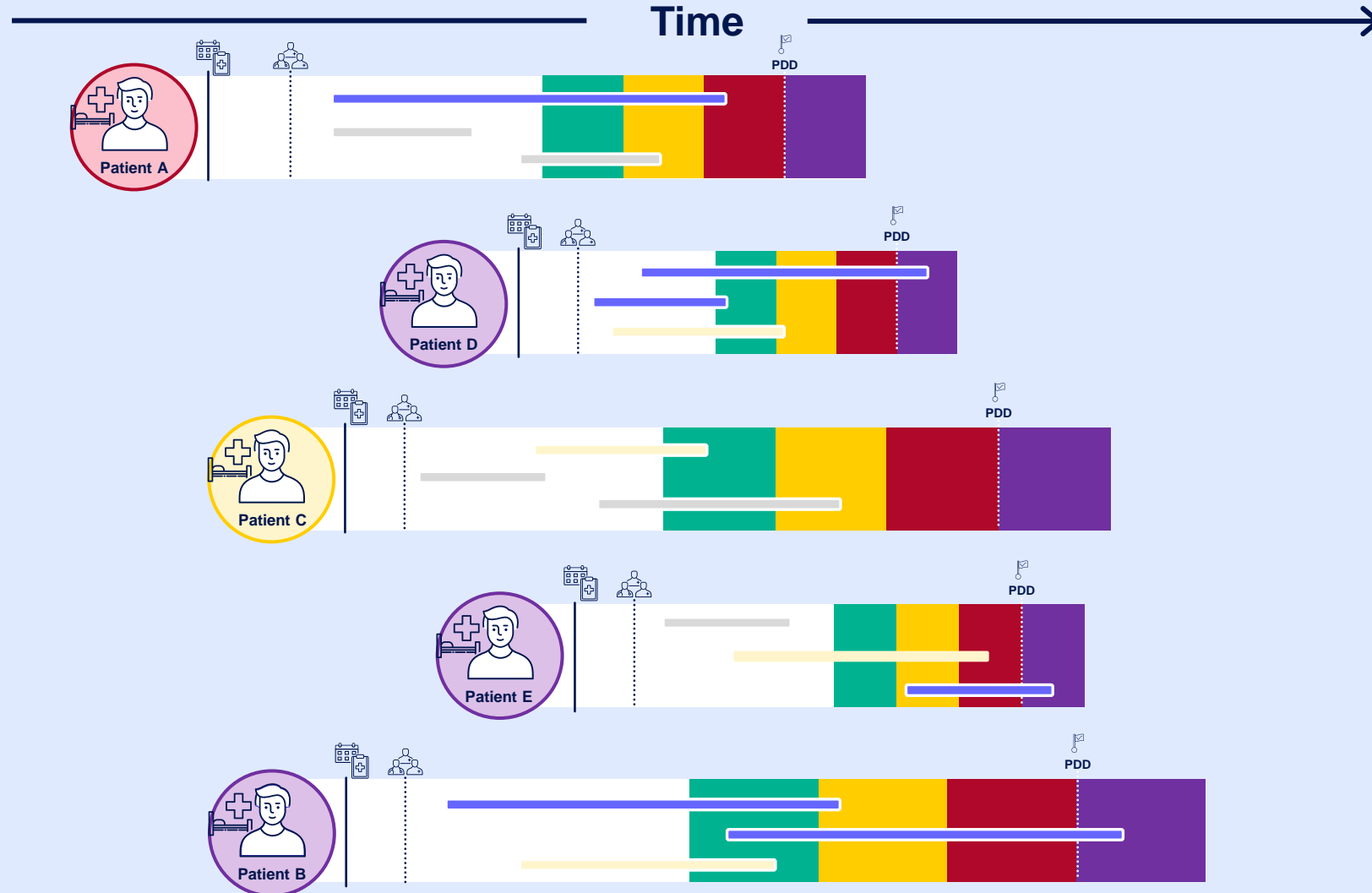


Applying the approach to many patients



Resources will be synchronized as they work on patients in PDD order.

Applying the approach to many patients

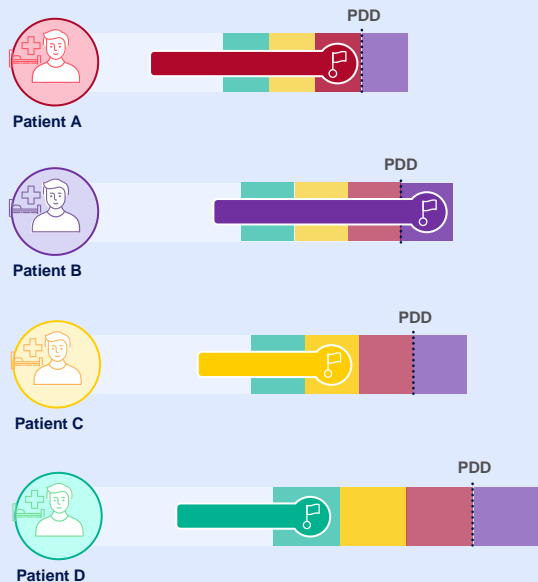


The evidence shows that the **blue resource** is causing most risk of delay to most patients most of the time.

The main objective is to improve flow across all patient pathways simultaneously

1 A patient-centered clinically led approach

Of all the patients I could work on next, which one should I work on next?



2 A focused process of ongoing improvement

Of all the things I could improve, which one should I improve first?

Daily priorities meeting

- Multidisciplinary team meeting (MDT) to set and review PDDs and tasks



Top delays meeting

- Identifying and resolving the causes of the most delayed patients or those most at risk of being delayed (early identification)



Leaders' meeting (focus)

- Deciding on where and how to focus improvement efforts next



Dashboard and deep-dive analysis tool (evidence)

- Monitoring progress and identifying where to focus next for the greatest impact



3 Removing local measures of optimisation

Without removing these measures, local optimisation will continue to disrupt patient flow and stagnate the process of ongoing improvement.

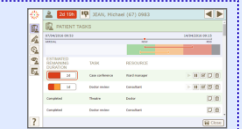
Patient priority list



Task priority list



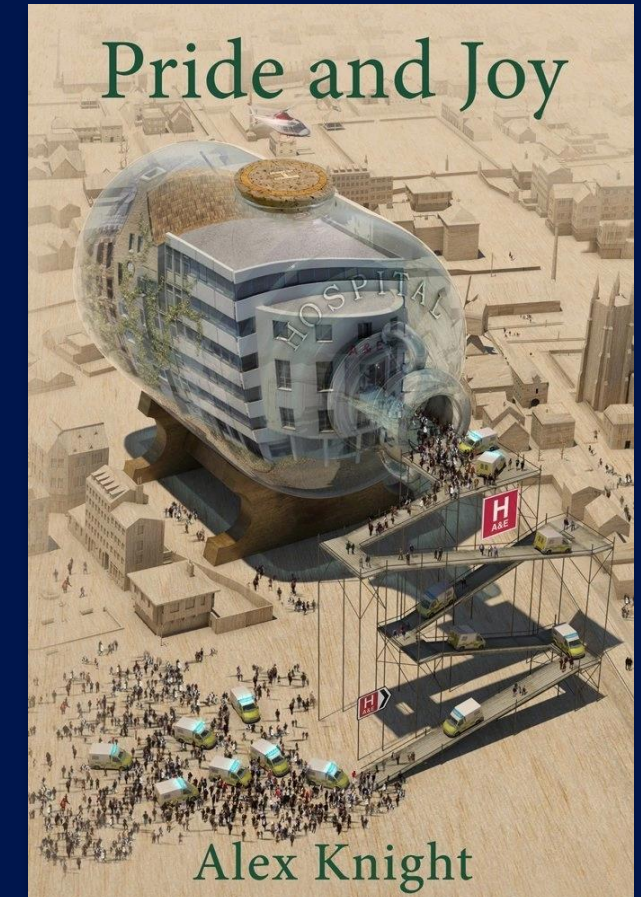
Time-based patient plans



- ✗ Mis-synchronisation
- ✗ Local efficiency
- ✗ Bad multitasking
- ✗ Batching
- ✗ Parkinson's law
- ✗ Cherry-picking
- ✗ Student syndrome

References

- Knight, Alex (2014): *Pride and Joy* (1st ed.). Linney Group Ltd.
 - This book describes the Flowful approach, formerly known as 'Pride and Joy'.
 - <https://youtu.be/3mkSflbYHeo>: A video of Alex Knight (ret.), the inventor, describing the approach at a hospital in Finland.
- Bacelar-Silva, G.M., Cox III, J.F. and Rodrigues, P.P. (2022): Outcomes of managing healthcare services using the Theory of Constraints: A systematic review. *Health Systems*, 11(1), pp.1-16.
 - An overview of the literature on applying the Theory of Constraints to healthcare.
- Goldratt, E.M. (2009): Standing on the shoulders of giants. *Gest. Prod.*, São Carlos, v. 16, n. 3, p. 333-343, jul.-set.
 - The inventor of the Theory of Constraints explains the development of various management focusing on flow, and how TOC builds on and differs from these, using examples from industry.



**A book describing the
application of the Theory of
Constraints to healthcare**



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Thank you

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