

# Designing our way out of Emergency

European Healthcare Design, 27 June 2016

Jonathan Wilson, Principal, Stantec

Ray Padinuk, Principal, Stantec

Drew Digney, Executive Medical Director, Vancouver Island Health Authority



Drama



Suspence



Action



# Reality for patients . . .



Reality for staff . . .



# Failure

'Black alert' is lifted but fears over A&E go on

*Portsmouth.co.uk, October 30, 2014*

A&E patients left waiting for over 12 hours

*The Argus, November 3, 2014*

All But One London NHS Trust Misses A&E Target

*LBC, March 18, 2014*

NHS facing 'challenging winter' with declining staff morale'

*Nursing Times, October 30, 2014*

NHS facing summer crisis as A&E performance deteriorates

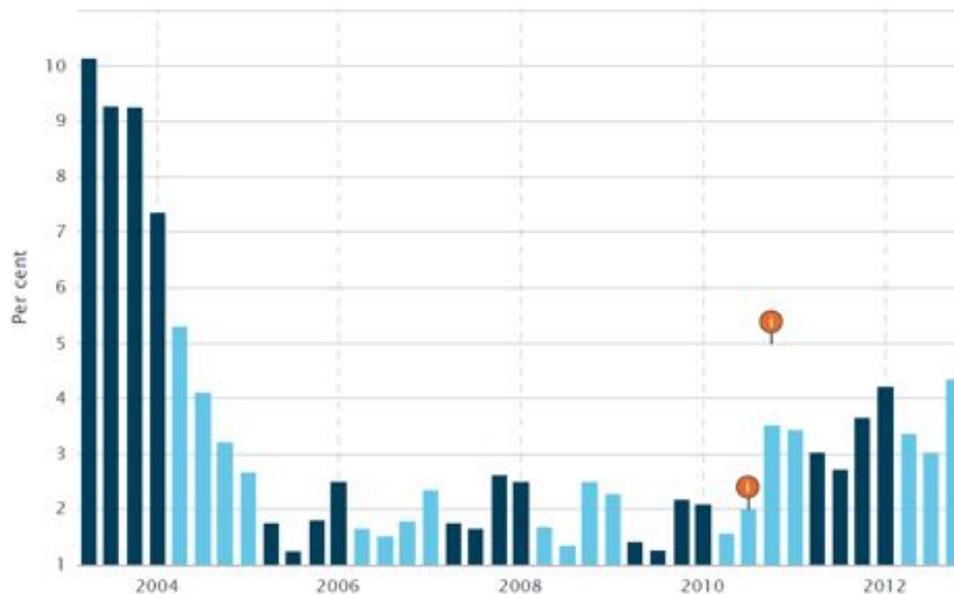
*The Guardian, June 10, 2014*

# 4 hour target (95+%)

December 2014 – 90% within

December 2015 – 91% within

Figure 1: Percentage of patients spending more than four hours in A&E from arrival to admission, transfer or discharge



Data source: A&E Attendances and Emergency Admissions 2015-16 (Monthly) [www.england.nhs.uk](http://www.england.nhs.uk)

# Demand increasing . . .

**3.2%** Growth in Major A&E<sup>1</sup> attendances from 2013 to 2014<sup>2</sup>

**26%** Increase in Major A&E attendances not meeting the four hour target from 2013 to 2014<sup>3</sup>

**60%** Increase in spending on locum doctors in A&E units over last three years

Advisory Board Company

Compared to 2003, in 2009 U.S. hospitals admitted

**2.7M more inpatients**



from hospital emergency departments

and **1.6M fewer inpatients**



from doctor's offices and other outpatient settings.

RAND Health research ([http://www.rand.org/pubs/research\\_report](http://www.rand.org/pubs/research_report))

# NHS response . . .

The Keogh urgent and emergency care review – January 2013

Five year forward view – October 2014

Carter Report – June 2015

Safer, faster, better – August 2015

Emergency care improvement programme (EPIC) -

<http://www.ecip.nhs.uk>

*Can design really  
make a difference  
or is this purely an  
operational and  
capacity issue?*

# UK innovation

## **Northumbria Specialist Emergency Care Hospital,**

Cramlington, UK

Architect: Keppie (concept – Jonathan Bailey UK)

## **Worthing Hospital**

### **Emergency Floor**

West Sussex, UK

Architect: ADP

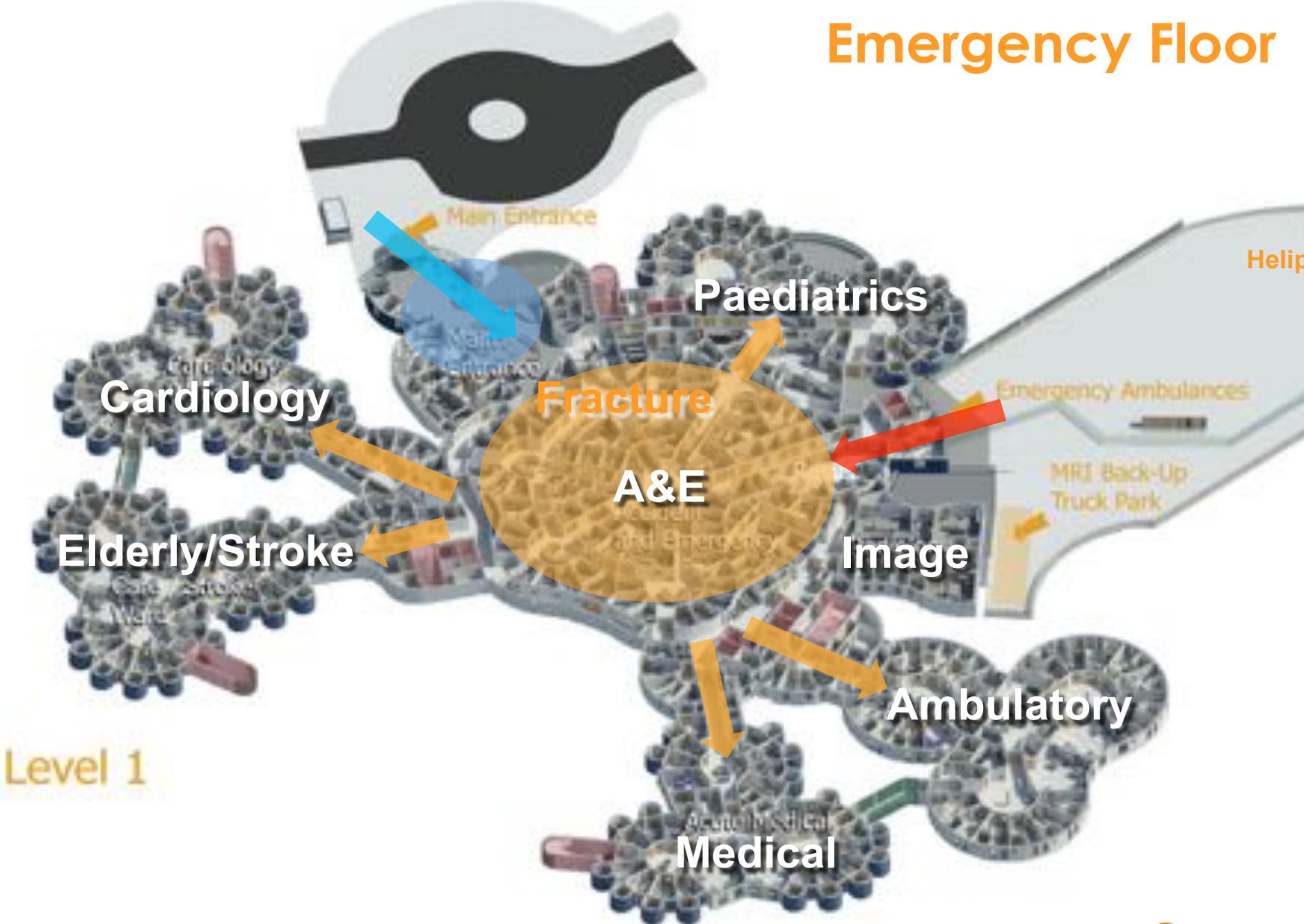
## **St Thomas' Hospital**

### **Emergency Department**

London, UK

Architect: ADP Art Strategist: Artinsite

# Emergency Floor



# Worthing Hospital Emergency Floor

<https://www.rcplondon.ac.uk/projects/development-sites>

**Surgical**

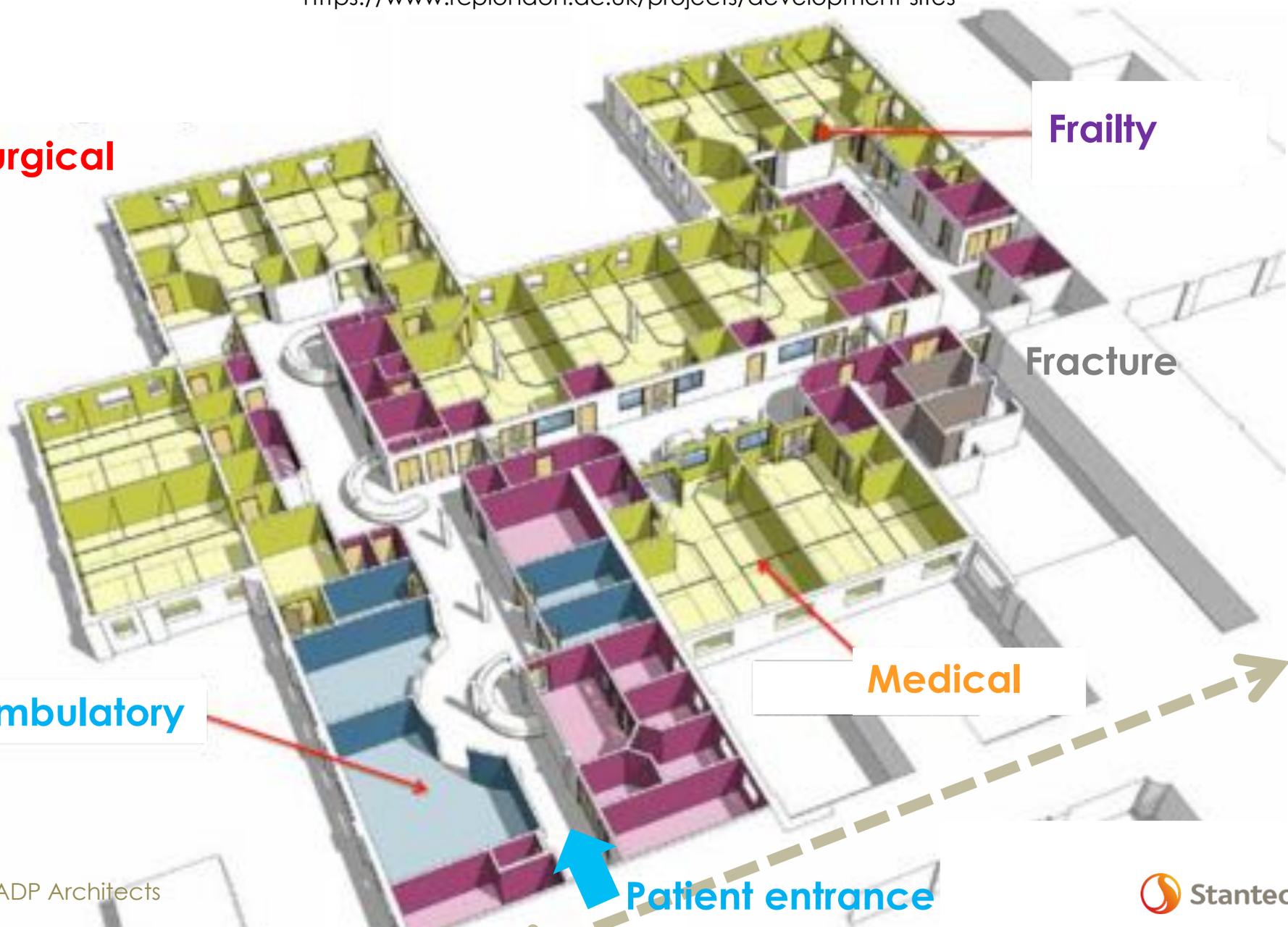
**Frailty**

**Fracture**

**Ambulatory**

**Medical**

**Patient entrance**





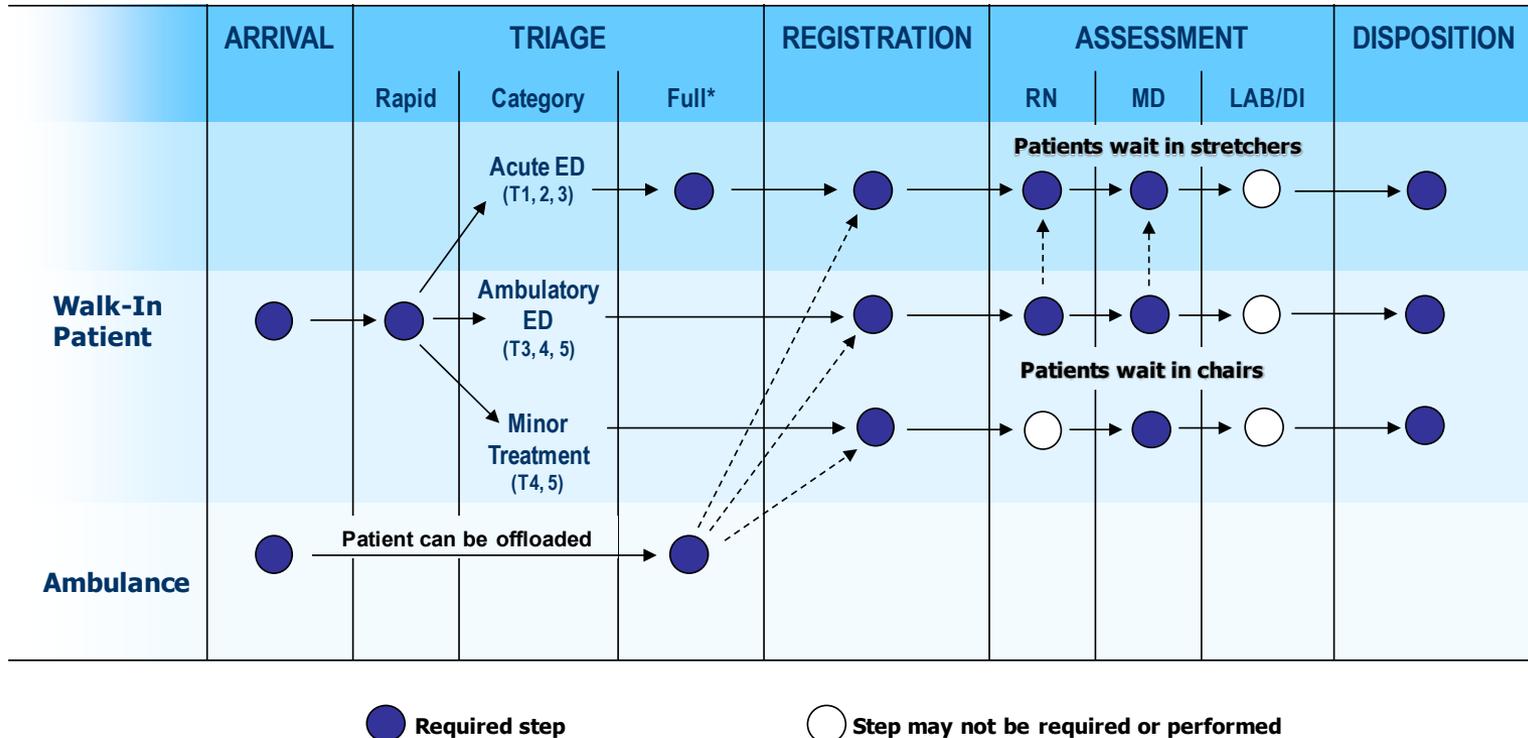
# Nanaimo Emergency Department



- 6,200 sqm
- Completed 2012
- 80-85k visits per year
- User engagement
- Integrated emergency care services incl:

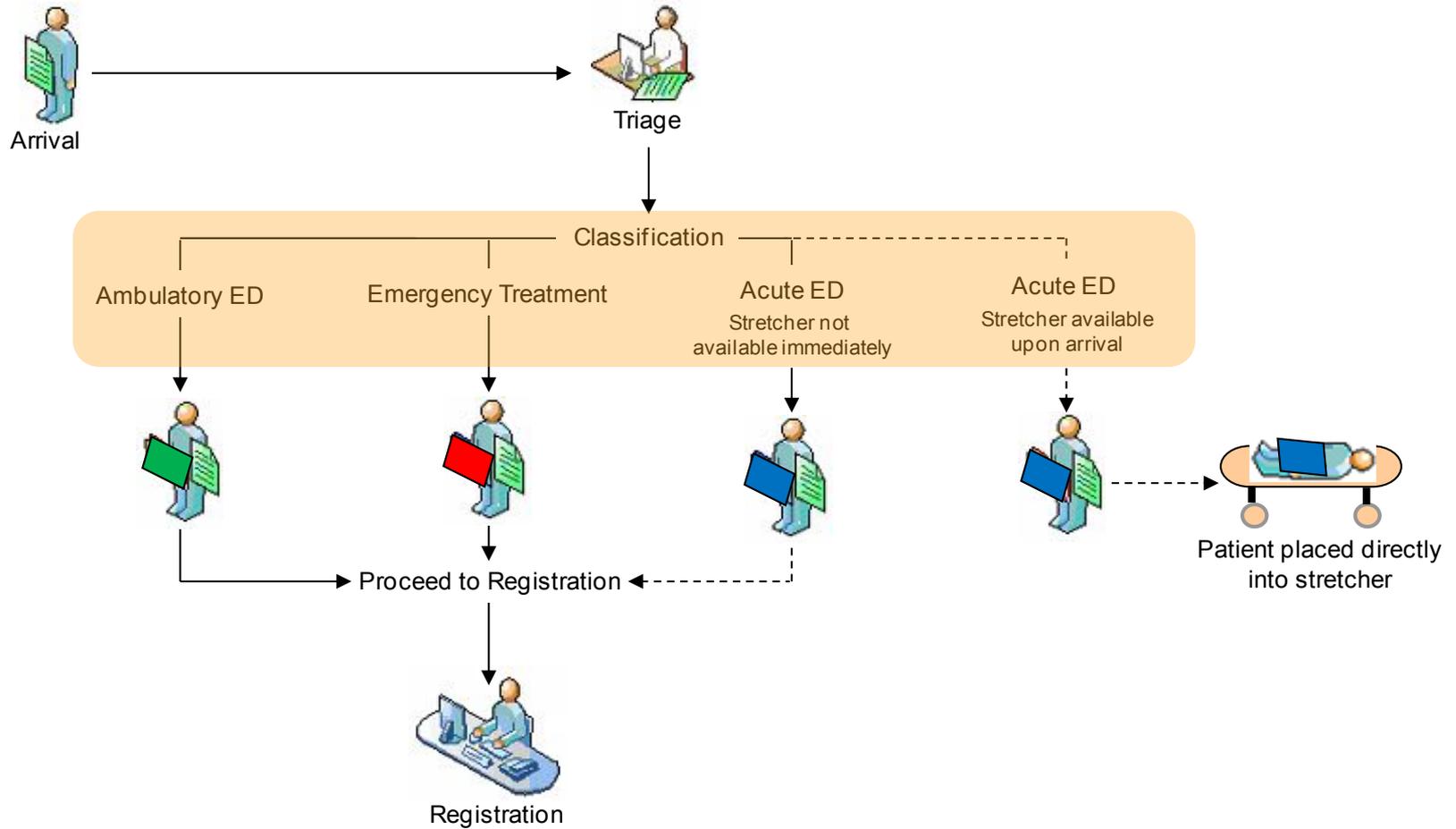
Triage/streaming  
Urgent/emergent care  
Trauma and Resus  
Ambulatory Care  
Psychiatric emergency suite  
Psychiatric intensive care unit

# Client's brief: Process design before spatial design

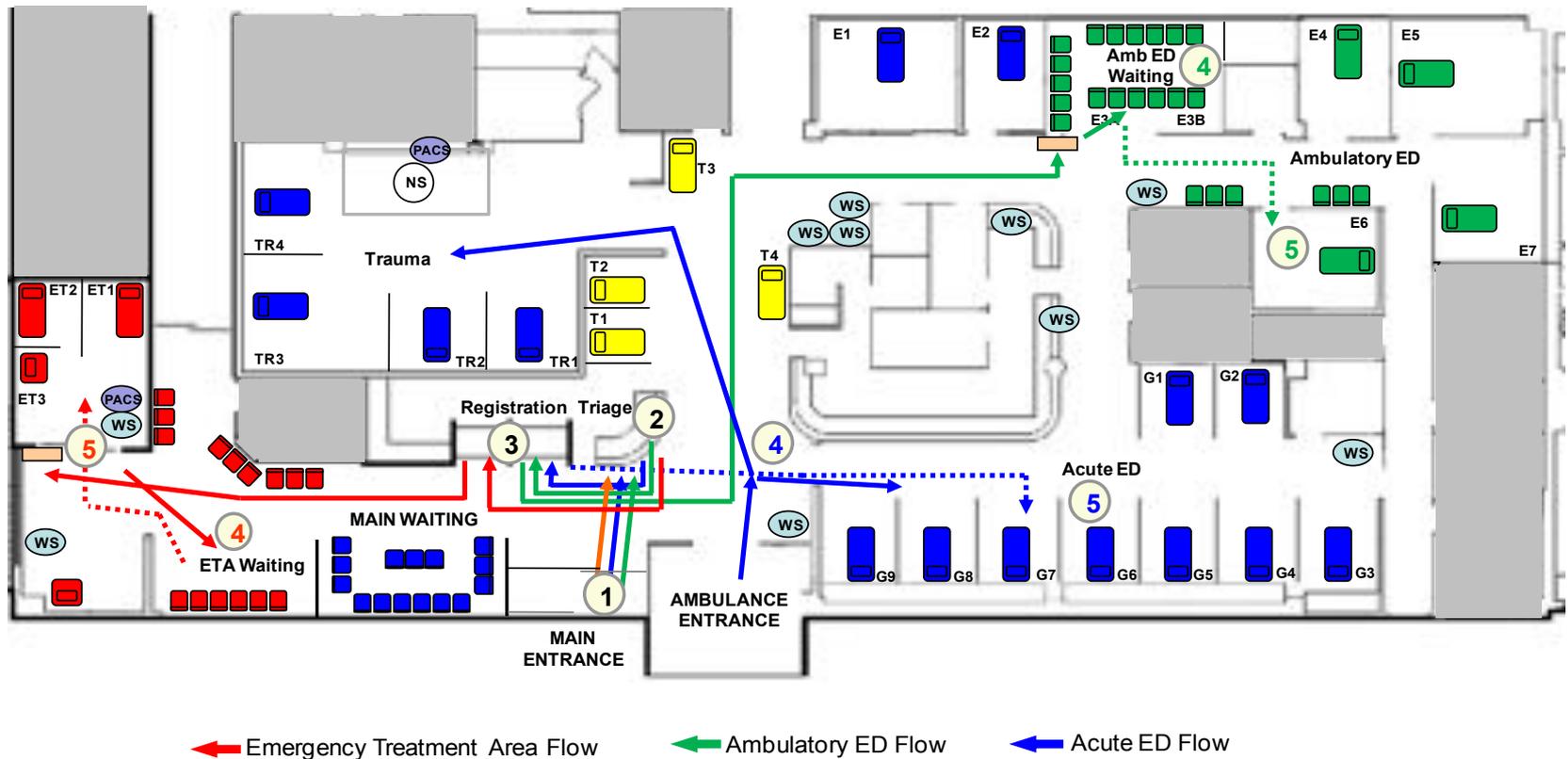


\* Full Triage may include in-depth history, pain score, medication history, additional modifiers

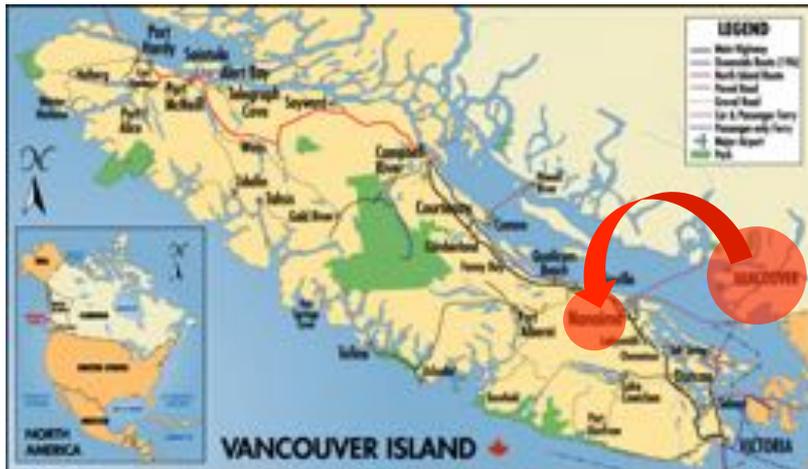
# Client's brief: Streaming process



# Client's brief: Front door flows clearly defined



# Location



20 minutes by float plane

90 minutes by ferry

# Island Envy

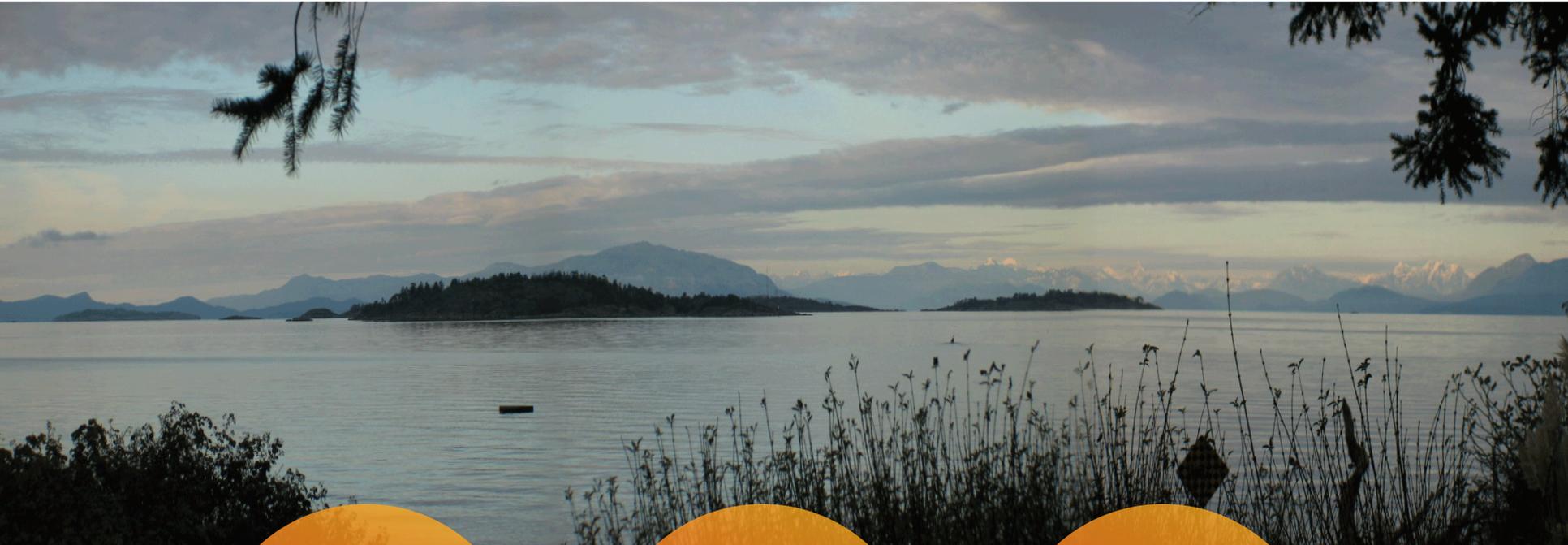


Vancouver Island pop 750,000  
Victoria pop 350,000



London, Birmingham, Liverpool,  
Manchester, Leeds, Edinburgh...

# Catchment



80,000  
(city)

150,000  
(region)

56,000 km<sup>2</sup>  
(island and  
mainland)

# Catchment



3,000 SM  
(ed)

6,000 SM  
(building)

65,000  
(ED patient visits)

# The old ED



# Visioning and Design Workshop

“The workshop created the ‘buzz’. You got us interested by letting us get involved. You were interested in us, what we had to say, and how we do things differently. You weren't some architect coming in here telling us how you were going to design our ED”.

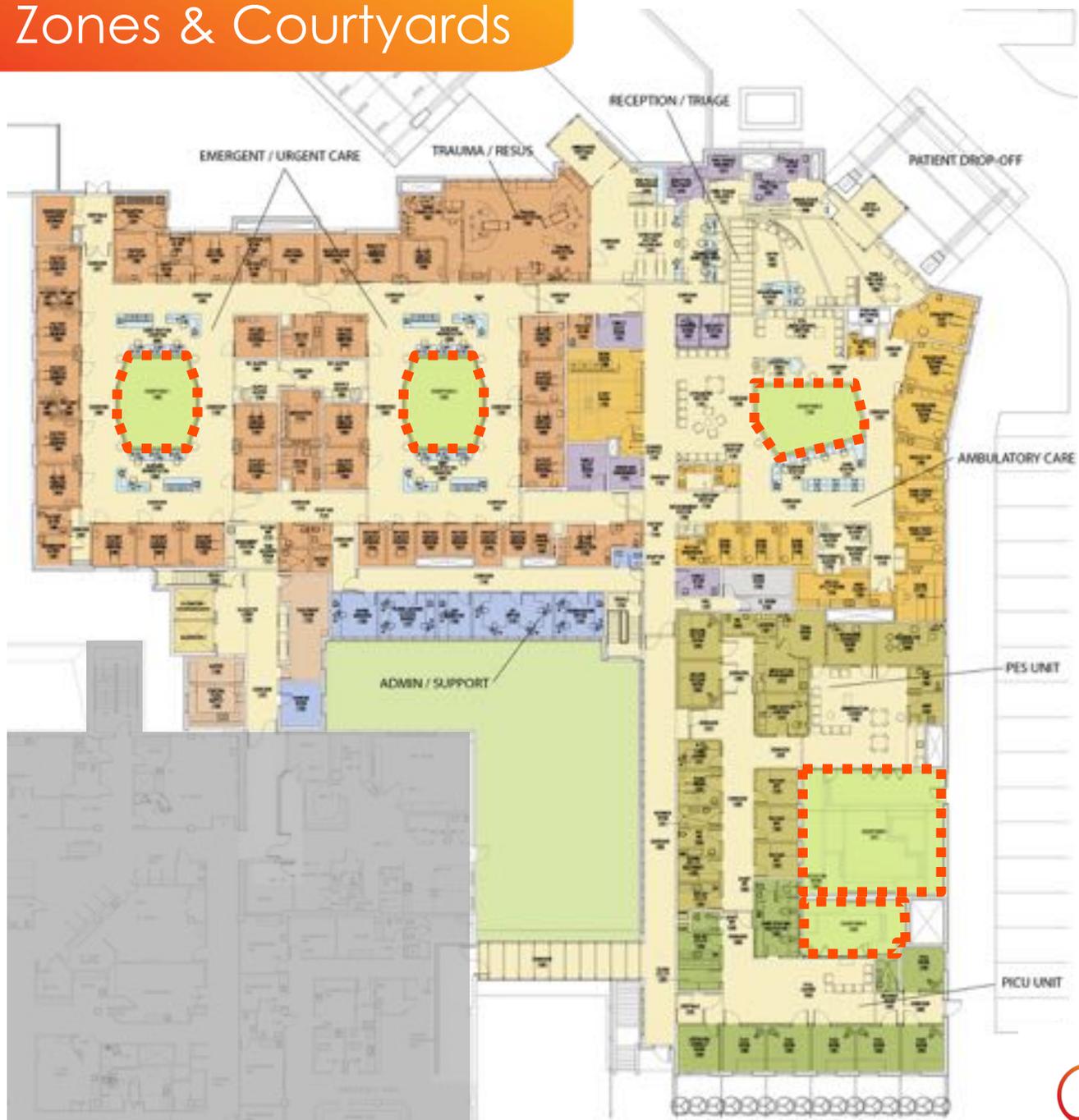
Dr. Drew Digney- Site Chief for Emergency and Trauma Services Nanaimo Regional General Hospital



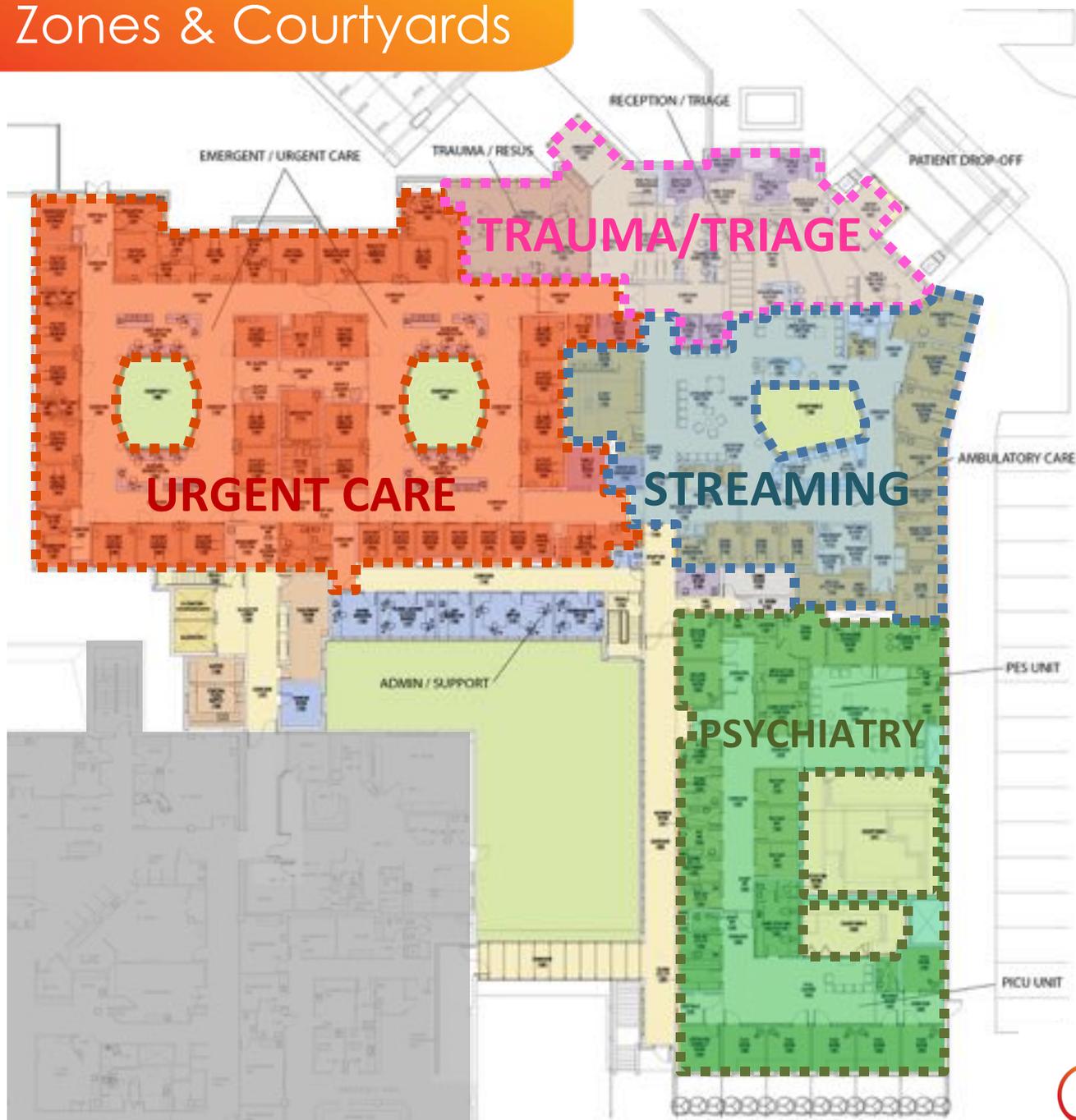
# 4 hr User Meetings



# Care Zones & Courtyards



# Care Zones & Courtyards



# TRAUMA



# TRIAGE

“We’ve made a conscious decision not to barricade the [triage] area behind glass”

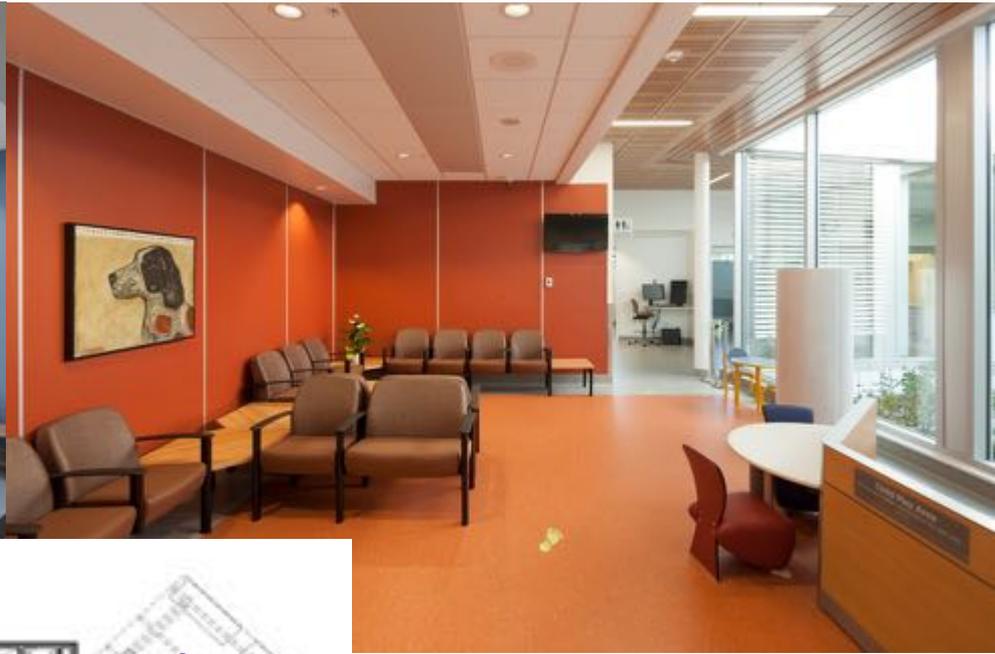
Suzanne Fox

Director of Emergency Services and Trauma Care Vancouver Island Health Authority



*Ergonomic triage desk  
No barriers*

# Ambulatory Care Zone (streaming)



Check-in Desk

Blue Zone

Red Zone

Team Station

# Diagnostic Corner – phlebotomy/EKG/X-ray



'Blue' Waiting Area



X-Ray

EKG

Phlebotomy



# Ambulatory Team Base



# Urgent/Emergent Care Pod



Care Station  
Shared Support Zone



POE question: There is plenty of daylight throughout the facility

“One hundred percent if we did this process again, we would do courtyards.”

Suzanne Fox



9.2 New

Old 3.1

# Shared soiled utility, clean supply and med rooms



Clean Supply Link

# Care Station



Exterior blinds deployed



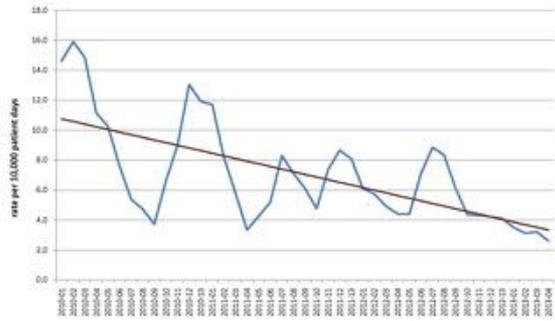
# Electronic Glazing in Treatment Cubicles



# Charting Stations between Treatment Cubicles



Rate of New Healthcare-Associated CDI: NRGH (3 month rolling average)



Enclosed Rooms

Privacy without Curtains

Custom Hand Wash Sink

Displacement Ventilation

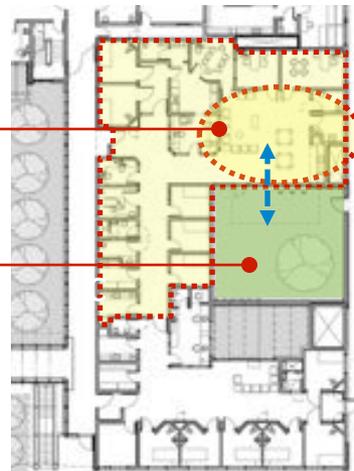
New healthcare-related CDI infection rate has dropped more than 50%

# Opening Wall in PES



Patient Day  
Lounge

Courtyard



## Results after the first year:

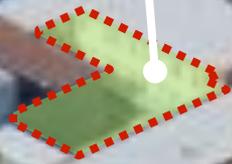
- **C-Difficile infections** reduced in half
- **Sick time** for staff less than previous year
- **Overtime** \$500,000 less than previous year
- Staff time loss-to-injuries rate improved
- Patient rating of perceived **care** reported as very good by 90% of patients and families
- Patient rating of feeling around **privacy** in the ED was reported as positive by 75% of patients
- Patient rating of the **courtesy** of the ED staff was reported as positive by 90% of patients
- Lowest **energy** use in BC - 1.1 million kwh/year of electricity, enough to power 100 homes

“The design is great and the  
service has improved  
immensely!”

A patient in the new ED

February 18, 2013

Lower Level Staff Courtyard



# Staff Courtyard



Staff courtyard



*"It should be so good that staff will want to drop in on their day off!!"*

Staff working on "their" courtyard on their day off.



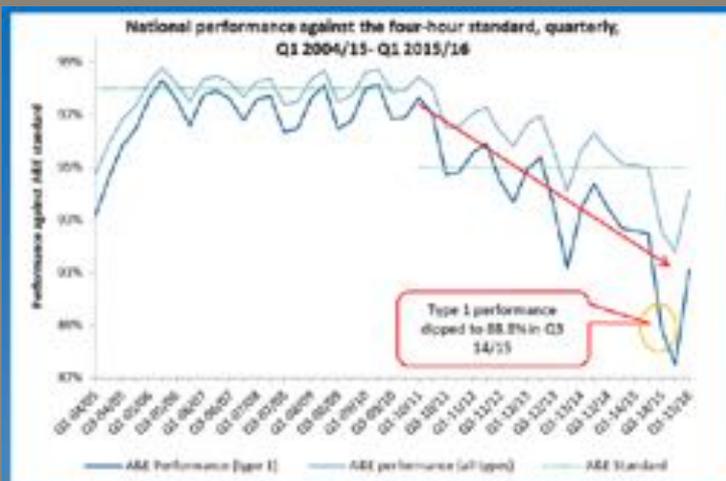
# Key issues

**Flows**

**Integration of care**

**Patient and staff wellbeing**

# Why it matters . . .



Patients attending crowded emergency departments have a higher risk of mortality over the next 7 days



For patients who are seen and discharged from an A&E, the longer they have waited to be seen, the higher the chance that they will die during the following 7 days

\* Hutcheon A, LeFoll M, Vermeulen M, Trodel G. Association between waiting times and short-term mortality and A&E/AI admissions after departure from emergency department: population based cohort study from Ontario, Canada. *BMJ* 2011;342:d1782

A study by Richardson found a **43%** increase in mortality at 10 days after admission through a crowded A&E

Richardson DB. Increase in patient mortality at 10 days associated with emergency department overcrowding. *Med J Aust* 2006;184:233-6

*Design, working  
together with clinical  
process and service  
integration, can make  
a real difference*

# Further reading

The evolving roles of emergency departments – Rand Corporation [www.rand.org](http://www.rand.org) (2013)

Transforming urgent and emergency care services in England - Safer, faster, better: good practice in delivering urgent and emergency care – NHS England (August 2015)

Health Building Note 15-01: Accident & emergency departments – Department of Health (2013)

# T H A N K   Y O U



**Dr. Drew Digney**, Executive Medical Director - Vancouver Island Health Authority  
[digneyd@gmail.com](mailto:digneyd@gmail.com)

**Ray Pradinuk**, Principal, Leader, Healthcare Research and Innovation  
[ray.pradinuk@stantec.com](mailto:ray.pradinuk@stantec.com)

**Jonathan Wilson**, Principal, UK Healthcare Sector Leader  
[jonathan.wilson@stantec.com](mailto:jonathan.wilson@stantec.com)

