

European Healthcare Design 2018

Transformational cancer centre design
supports the implementation of
disruptive technologies

Catherine Zeliotis
11th June

navigating change in healthcare design



Bow River, Calgary, Canada

innovation - incremental versus disruptive

incremental

1

- what are the long term goals?

2

- what conditions need to be in place + how do they interrelate?

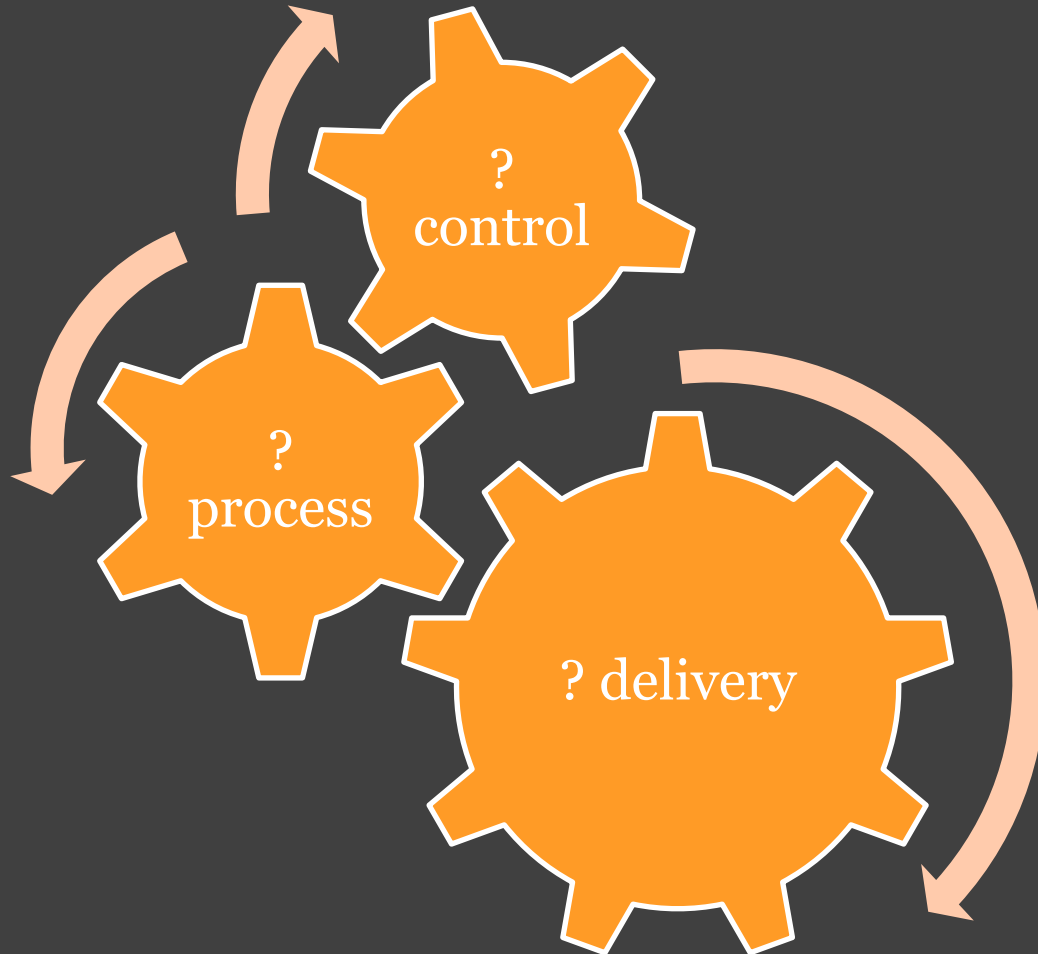
3

- how will this be measured?



innovation - incremental versus disruptive

disruptive



Back to the Future II, 1989

disruptive innovation in healthcare

diagnostics

Smart phone + wearable trackers



A hub
connection -
effective data
collection
devices



24hr point-of-
care health +
wellbeing
tracking

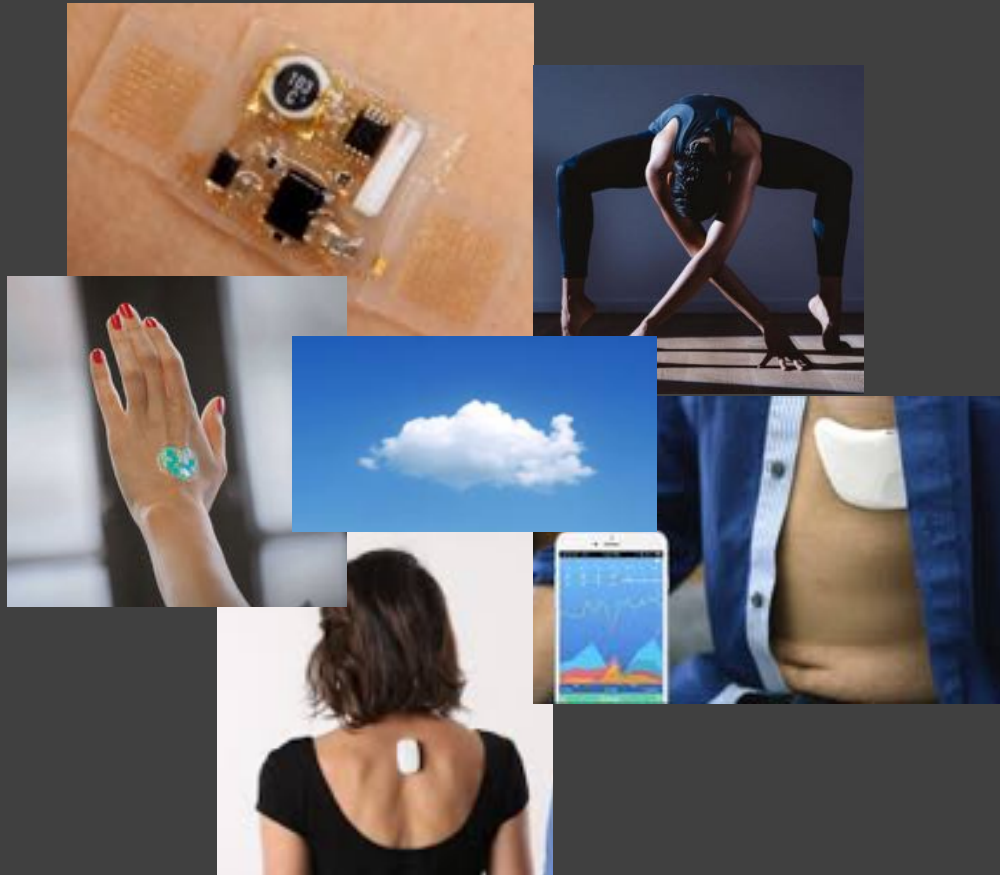


disruptive innovation in healthcare

diagnostics

Smart patches + smart clothes tracking

dehydration
level, heart
rate,
respiration +
core body
temperature
oxygen
saturation,
blood sugar
UV exposure....



epidermal
electronics
measuring
gait or muscle,
sleep, falls,
posture,

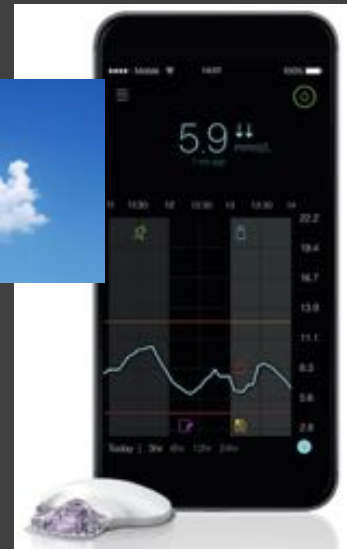
disruptive innovation in healthcare

therapeutics

Implantable trackers + drug delivery mechanisms

digital medicine
system - oral tablets
embedded with
sensor - compatible
smartphone sends
data to patient,
healthcare providers
and caregivers

FDA approval 2017



24hr
continuous
glucose
monitor
(CGM)+ IBM
Watson
*FDA approval
2018*

disruptive innovation in healthcare

diagnostics + therapy

Telemedicine + portable point of care devices

Remote Presence Robotic Technology + 'doc in a box'
Dr, Ivar Mendez
Saskatchewan, Canada, 2018

Stanford's Primary Care 2.0 -
'meet patients where they want to be met, in-person or virtually' , USA
2018



disruptive innovation in healthcare

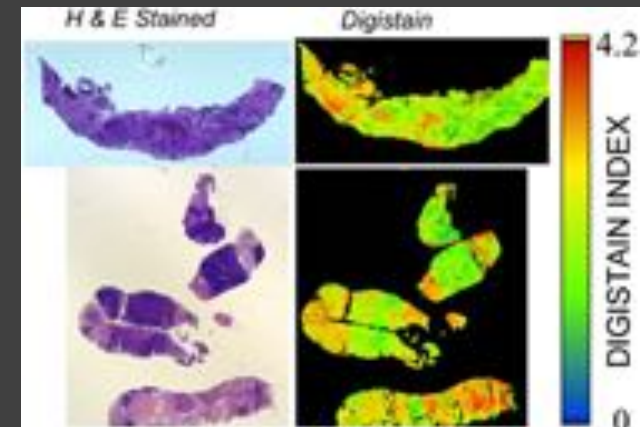
diagnostics

Artificial intelligence platforms

IBM Watson , Google Deepmind

'Practitioners given the same slice will only agree on its grade about 70% of the time, resulting in an overtreatment problem'

- *Skin & Lung cancer studies, Stanford University, 2016/17*
- *Retina analysis detects cardiovascular risks, Google AI, 2018*
- *Digistain, Department of Physics & Department of Surgery and Cancer, Imperial College, 2018*



disruptive innovation in healthcare

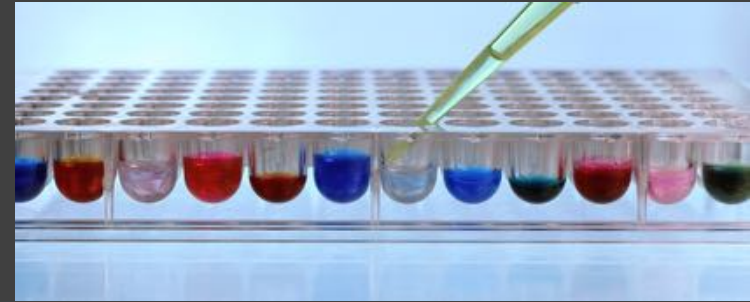
diagnostics

Cost-effective genomic sequencing + AI

Pharmacogenetics

Precision medicine - tailored to your individual makeup rather than 'one size fits all'

- Targeted treatments
- Uniquely composed drugs
- Immunotherapies



IBM - Watson Genomics +
biotech company Illumina,
January 2017

design that supports disruptive technologies

Will this ever happen?

And if it does, what
about empathy and
the patient
experience ?



design that supports the patient experience

'I don't have much time left, and I don't want to spend the little time I do have in your waiting room'

Wait Time is a top patient concern:

Between Calling & 1st Appointment

In Registration Area

In Chemotherapy Area

In Radiation Therapy Area

design that supports the patient experience

simplifying patient flow through treatment



Taussig Cancer Center, Cleveland Clinic, Ohio, 2017

'The patients are in one place that's tailored to their needs and everyone comes to them' Dr Pennell

design that supports disruptive technologies

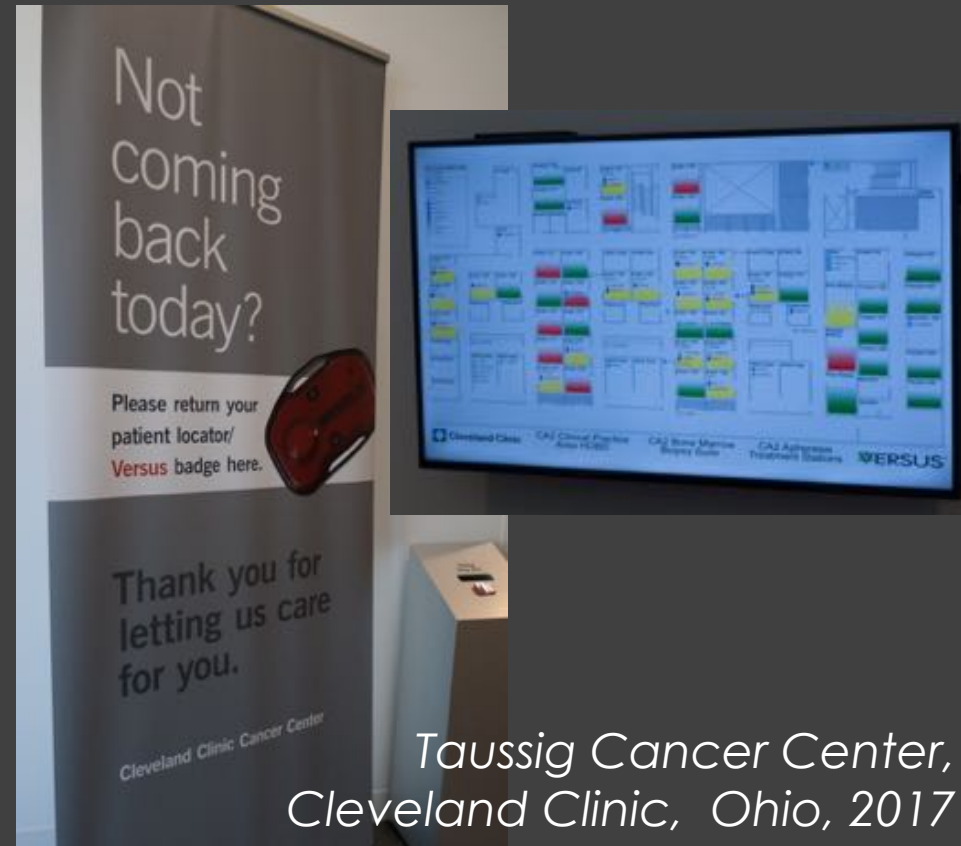
simplifying patient flow through treatment

Patient & staff RFID tracking system

Real-time, colour-coded computer screens

Staff coded according to their speciality

Reduced overall wait for chemotherapy patients from more than 60 minutes to just 20 minutes



design that supports disruptive technologies

multidisciplinary cancer care – new models

horizontal V vertical relationships :
100 consult exam + 100 infusion bays

- Multidisciplinary
- Clinics by tumor model
- Patient journey
- Staff integration
- Expansion capabilities



*Taussig Cancer Center,
Cleveland Clinic, Ohio, 2017*

design that supports disruptive technologies

multidisciplinary cancer care – new models



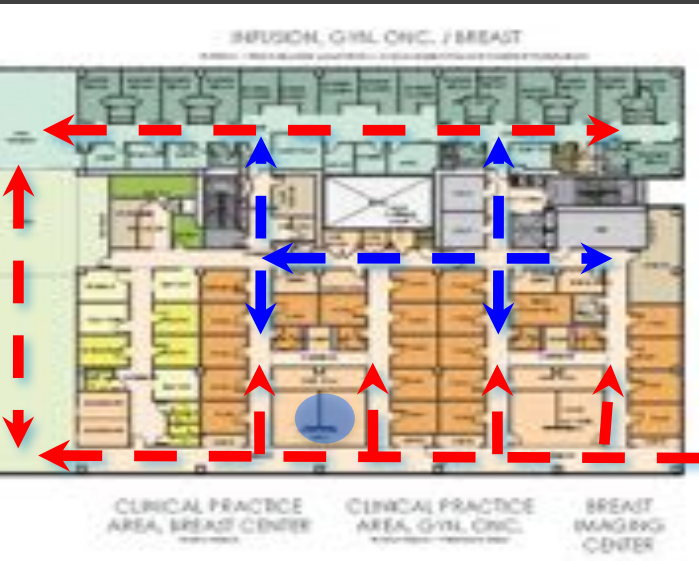
Cleveland Clinic Taussig Cancer Center, Ohio, 2017

design that supports disruptive technologies

multidisciplinary cancer care – new models

patient journey along daylight

staff hub embedded in clinics

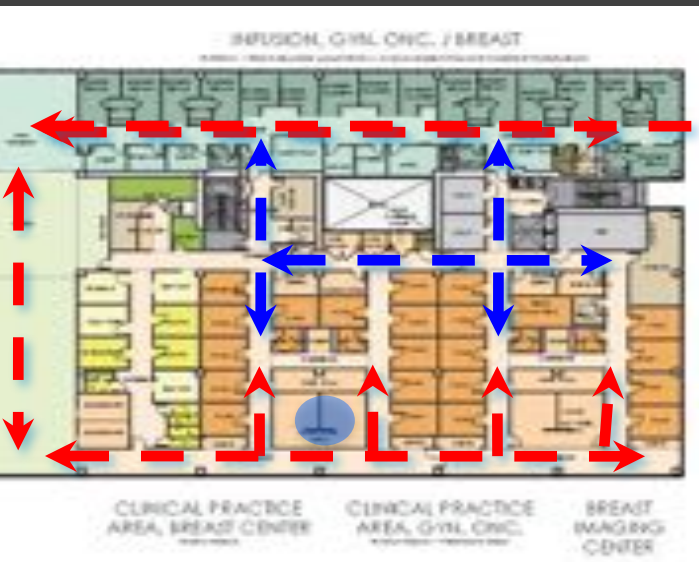


Cleveland Clinic Taussig Cancer Center, Ohio, 2017

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multidisciplinary cancer care – new models

Intuitive patient
wayfinding

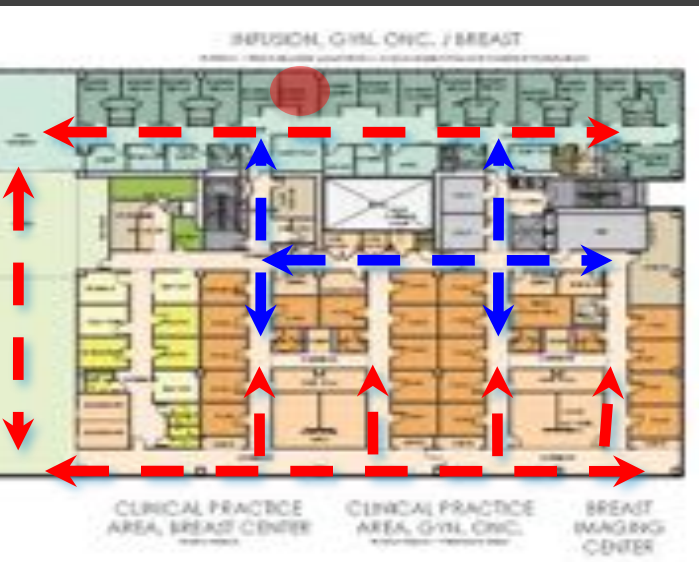


Cleveland Clinic Taussig Cancer Center, Ohio, 2017

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multidisciplinary cancer care – new models

- Individual infusion bays



Cleveland Clinic Taussig Cancer Center, Ohio, 2017

design that supports disruptive technologies

multidisciplinary cancer care – new models



Cleveland Clinic Taussig Cancer Center, Ohio, 2017

'A place of light, confidence and hope'

Dr Cosgrove, CEO, 2017

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multidisciplinary cancer care – new models

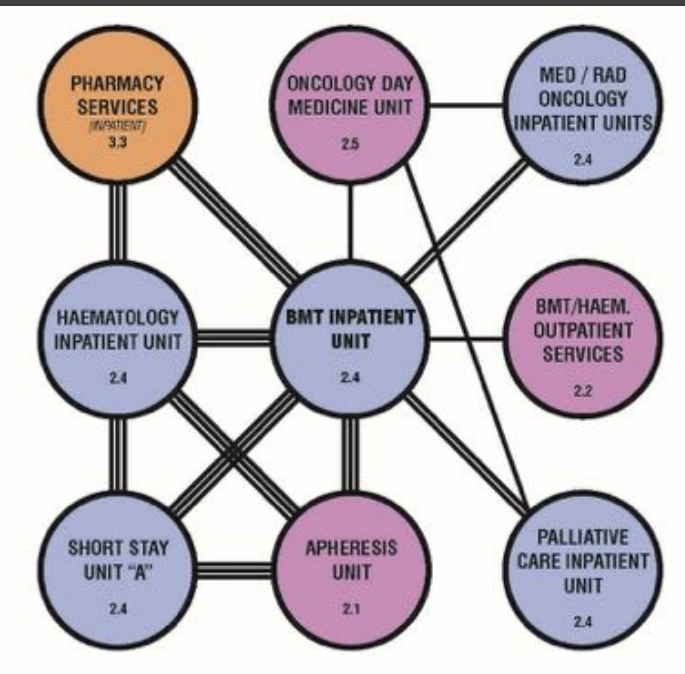
'Building a centre of hope'



Calgary Cancer Centre, Alberta, Canada

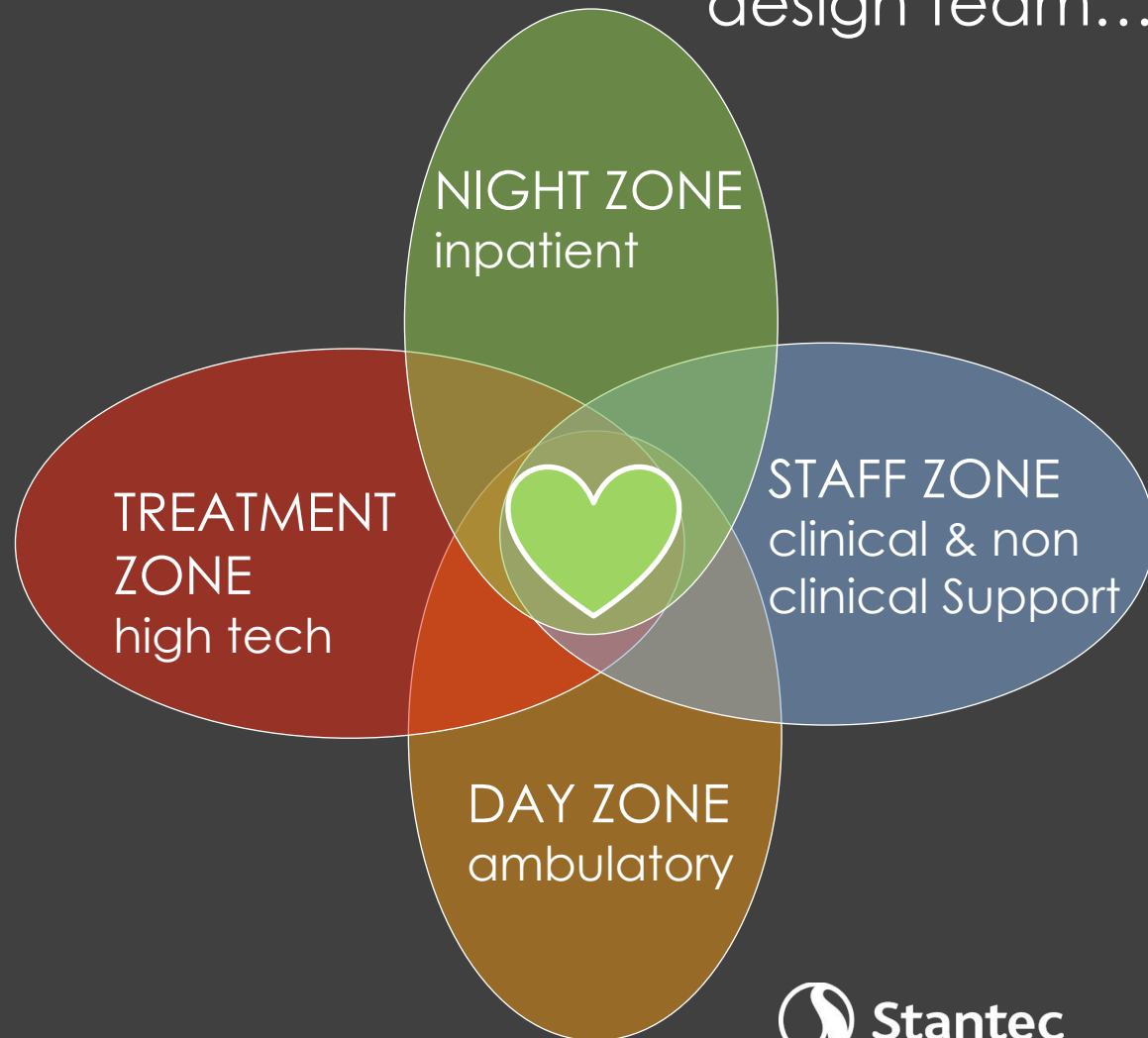
design that supports disruptive technologies

The theory for the
client team....



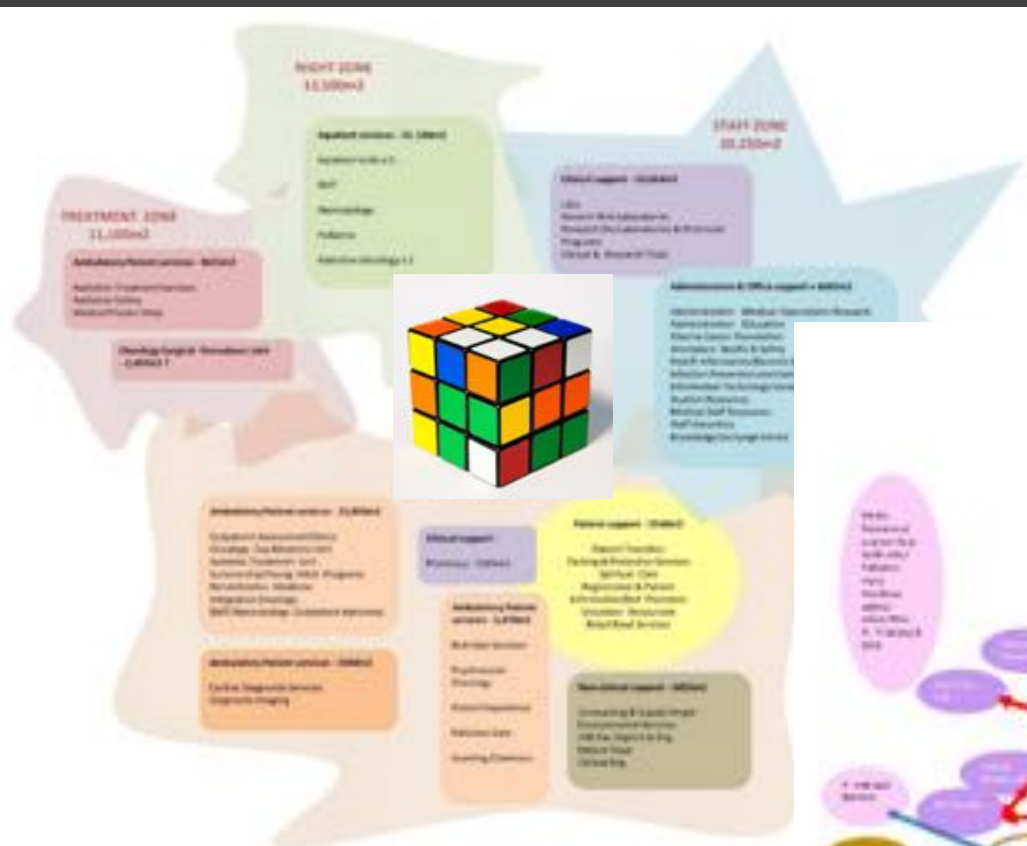
Calgary Cancer Centre

The theory for the
design team...

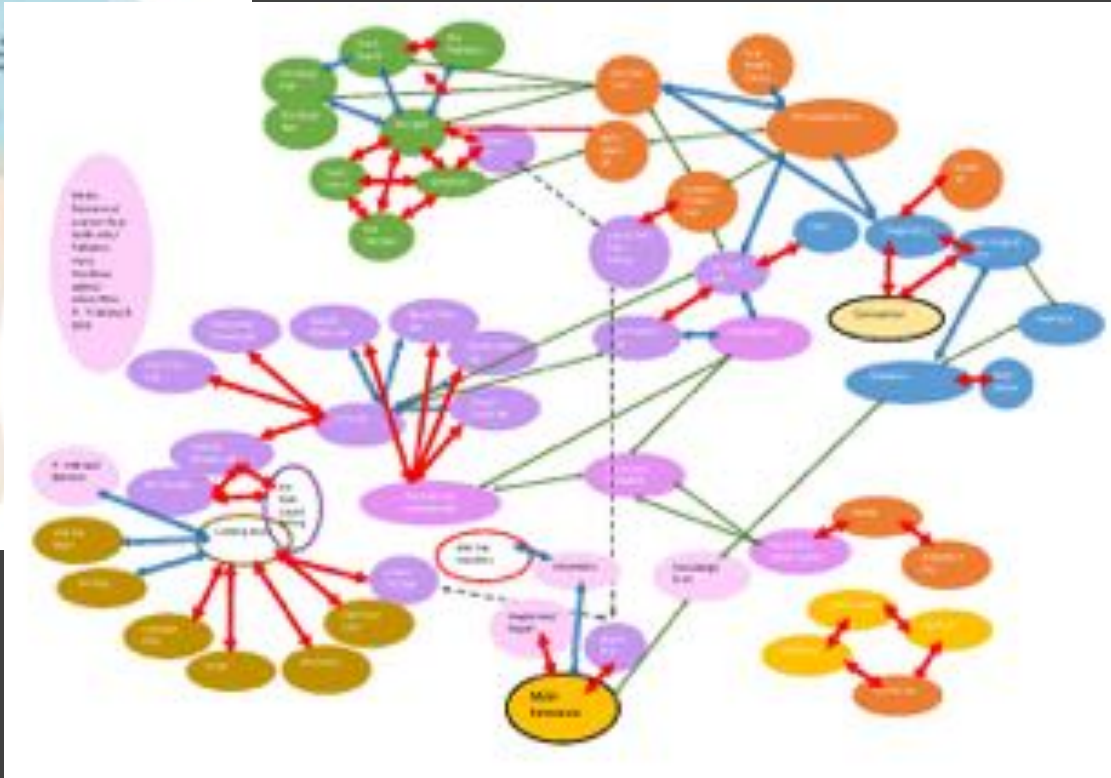


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the reality ...
fitting the puzzle of
complex flows +
interrelationships



Calgary Cancer Centre



addressing the emotional needs of the community

Calgary Cancer Centre

‘When you walk those halls and you wonder if treatment — which is chemotherapy, which is essentially poison — will work for you, you need a lot of hope’

*Susan Cardinal
cancer survivor and member
of the Patient and Family
Advisory Network Calgary
Cancer Centre*



Calgary Cancer Centre, Alberta, Canada

addressing the emotional needs of the community

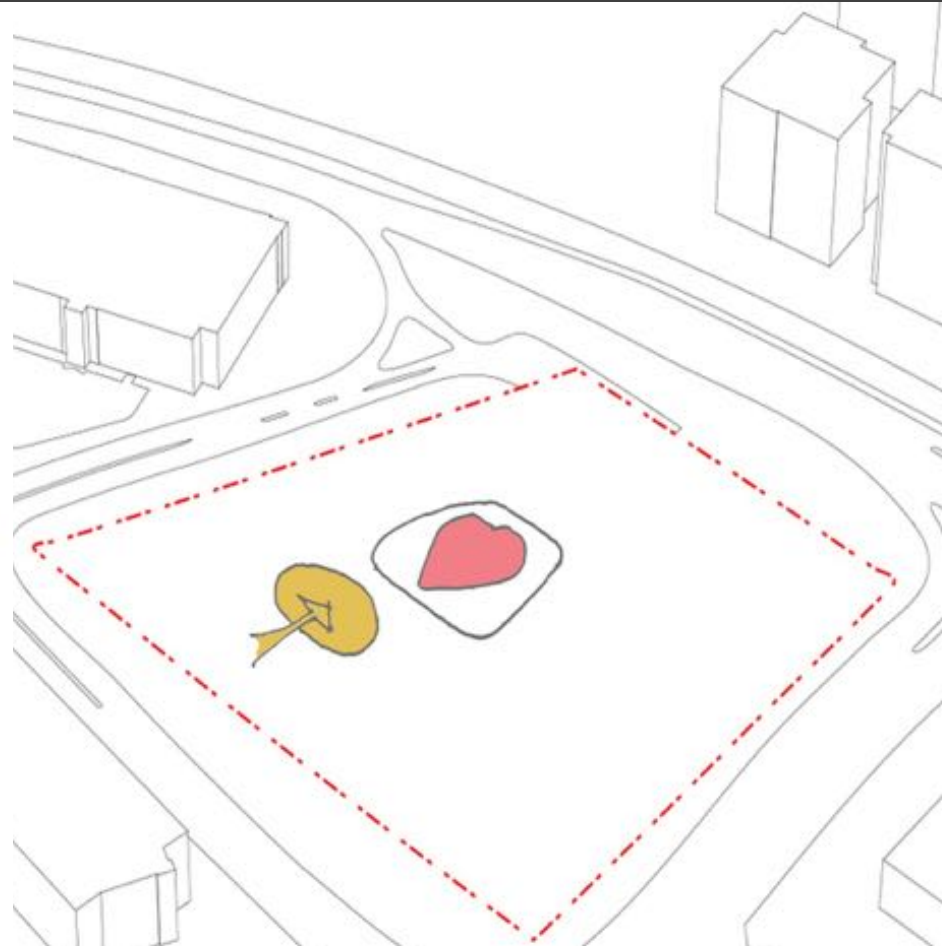
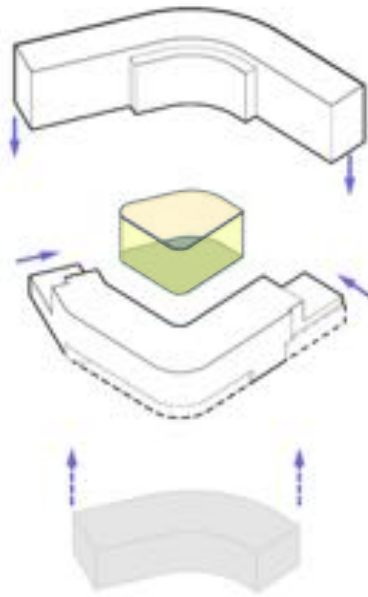
'A building where design goes to the heart of healing'

Inpatient/
Research

Heart/
Healing
Gardens

Outpatient/
Welcome

The Heart



Calgary Cancer Centre, Alberta, Canada

addressing the emotional needs of the community

Welcome Village – Landscape integration



The landscape design is peaceful and conducive to wellbeing. The landscape embraces the building curves of a natural landscape linking private and views to built structures.

Level 3 Access to Nature



Calgary Cancer Centre, Alberta, Canada

addressing the emotional needs of the community

Welcome Village – The 'Town Square' and patient resources

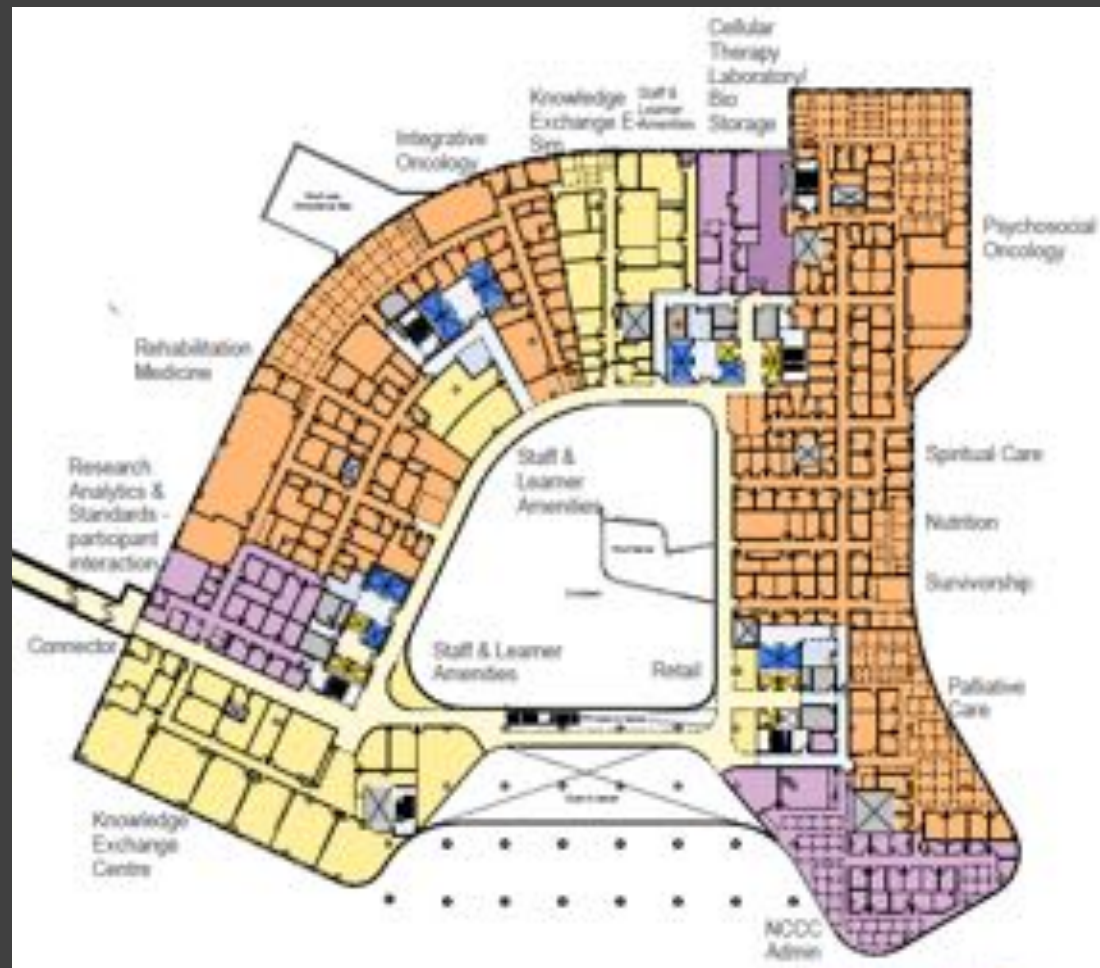


Calgary Cancer Centre, Alberta, Canada

addressing the emotional needs of the community

Level 2 - Supportive Care with embedded Research Analytics and Education (4,200m²)

- Rehabilitation Medicine
- Integration Oncology
- Nutrition Services
- Spiritual Care
- Psychosocial Oncology
- Palliative Care
- Knowledge Exchange



design that supports disruptive technologies

Level 0 - Radiation treatment

- Waiting spaces adjacent to courtyards
- On treat outpatients clinics & day unit
- 12 vaults
- 3 innovation vaults for future technologies
- treatment simulation – MRI & CT
- Soft expansion adjacent area

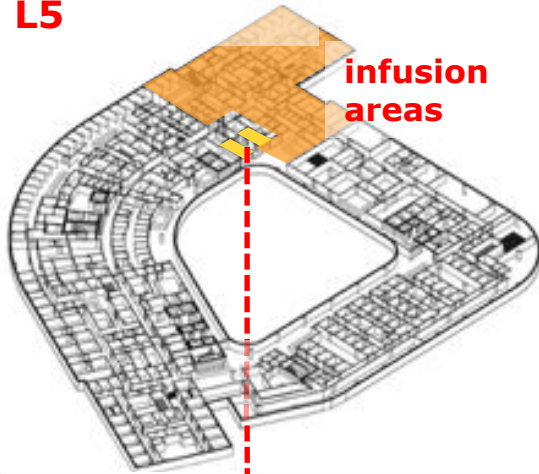


Calgary Cancer Centre, Alberta, Canada

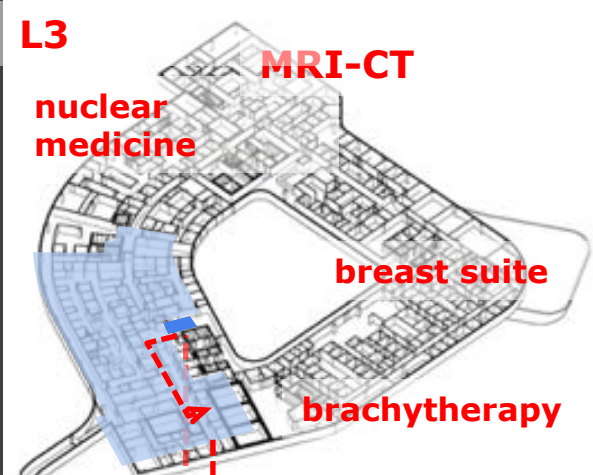
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Radiation treatment – surgical and infusion links

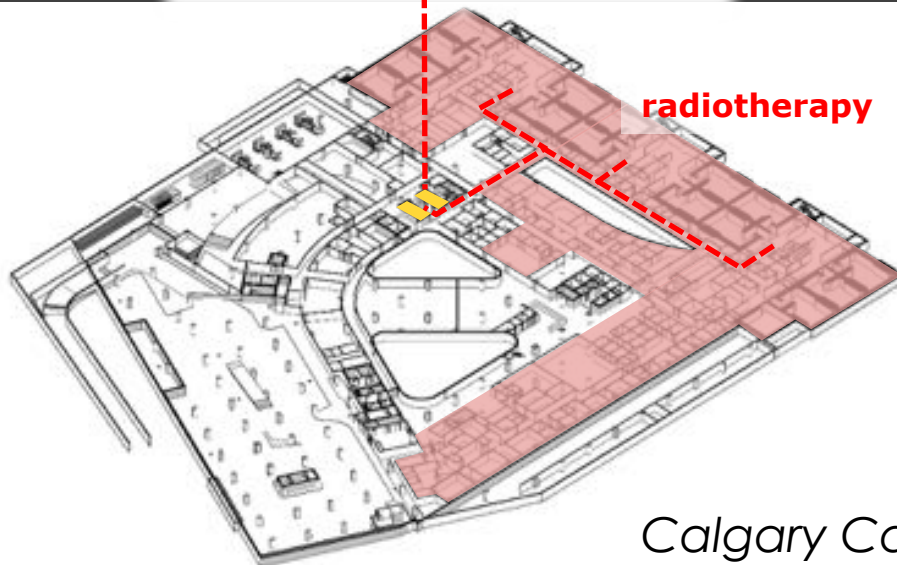
L5



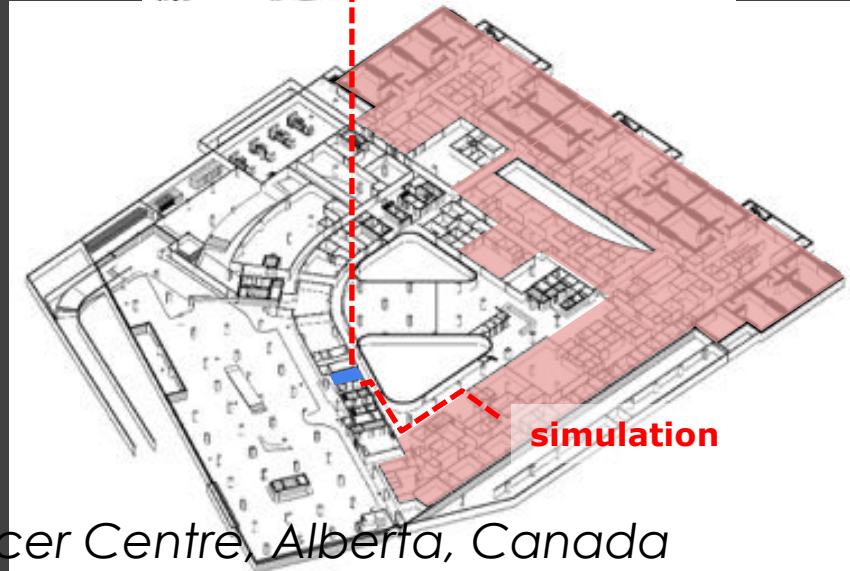
L3



radiotherapy



simulation



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Radiation treatment – emotional maps

- Working with patients to address their anxiety concerns
- Designing in landscape at heightened anxiety nodes



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Radiation treatment – entry view of courtyard



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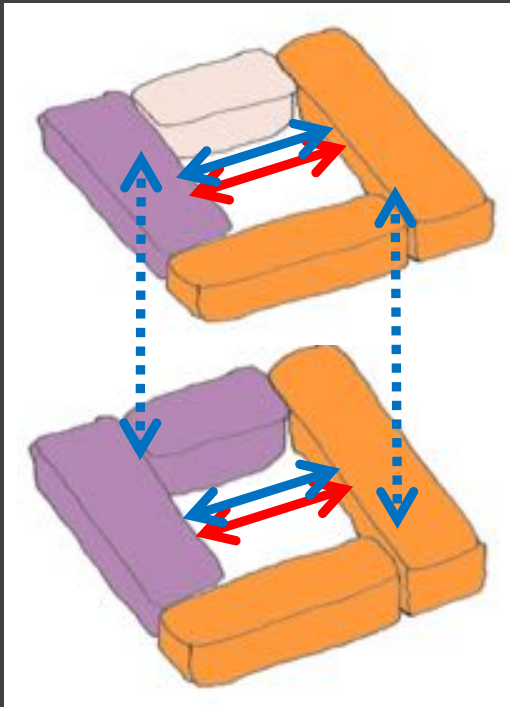
Radiation treatment – view of linac subwaiting



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multidisciplinary care

- Level 5/6 - procedure clinics & clinics / infusion modules
- Embedded research touchdowns, clinical trial hub
- Future expansion – ‘soft’ administration areas, data rooms, vertical circulation



vertical relationship
model



design that supports disruptive technologies

multidisciplinary care

outpatient clinic modules



Calgary Cancer Centre, Alberta, Canada

design that supports disruptive technologies

multidisciplinary care

Systemic Infusion modules



Calgary Cancer Centre, Alberta, Canada

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Research integration

Core Labs/ Wet Research

Collaboration hubs

Soft office areas allow for future expansion

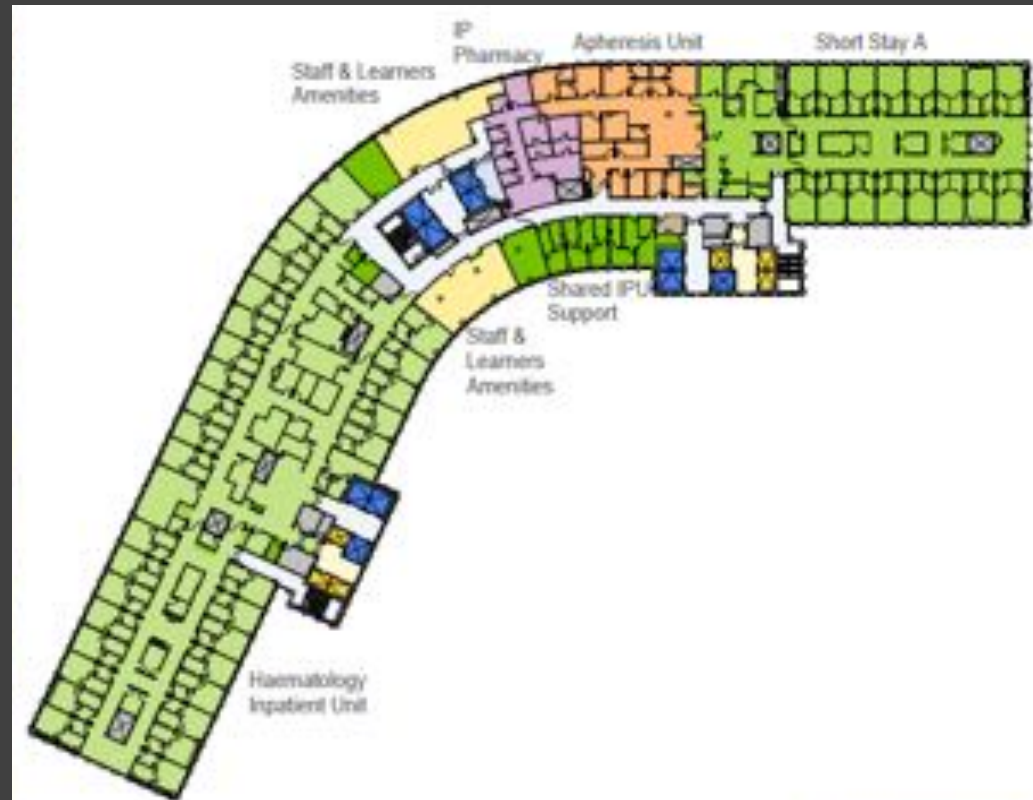
Direct data links with University of Calgary



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inpatient units - 160 beds – 32b x 5 units

- Bone Marrow Transplant 32b
- Haematology 32b
- Palliative Care 32b
- Medical Oncology 64b
- Short Stay units
- Inpatient pharmacy
- L9/L10 - office areas allow future expansion of two units



navigating change in healthcare design

'embracing the healing heart'

Adaptability

Connectivity

Expansion



Calgary Cancer Centre, Alberta, Canada

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*'there is nothing
permanent except
change'*

Heraclitus
Greek Philosopher
544 BC - 483 BC



*Lousios River, Arcadia,
Greece*

thank you