Innovation across System Levels: Human-Centred Services

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Design for Care: Innovating Healthcare Experience

Helping designers transform healthcare services through *design as care practice*.

- 9 Chapters across health sectors
- Rethinking Consumers, Patients, Systems
- Innovation of Services, Practice, Info Technology
- Research, Methods, Cases
  Wrapped around a care story
- A Starting Point – not final word
A Design Movement in Healthcare

• Information Technology & Digital Assets
• Devices & Medical Products
• Patient Experience & Services
• Environments & Workplace

Can human-centred design (HCD) help us innovate ...
• Clinical care models
• Organizational culture / structure
• Distributed care systems
• Better policy, agencies, decisions?

Vendor innovation
Clinical innovation

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Design cuts across & integrates complex domains.
So what’s the problem?

- **Patient-centricity.**
  This is a *huge* change, not just another process.

- **Social determinants & outcomes.**
  *Clinical design research*, new mixed-qual approaches

- **Absolute, strategic driver for integration.**
  Expense, risk, & complexity of fragmentation.

- **Peak Lean.**
  We have maximized return on efficient workflows.
  Balance processes with HCD.
**Lean is not a wicked problem solver.**

- Optimizes current practices. Very well.
- Analysis, not synthesis. Impedes systems thinking.
- Reinforcing “As Is” Impedes innovation.
- *Process fixation* after analysis & retraining.
- Cannot address future “unknowns”
We have Innovation Centres & Labs

- Necessary. Could be networked.
- Lab metaphor may not be productive.
- Must be positioned to achieve change.

- Divergence between innovation culture –
- And evidence-based (workflow) culture.
Wicked Innovation Problems ...

- Unprecedented aging demographic
- People *living with* multi-chronic diseases
- Complexity of social determinants
- Medical innovation – costs & *churn* of technology
- New business models – Risks of change, & not
- Healthy Communities – *Care as a Service?*

- *Systemic problems*, studying human needs & culture. Design of social, clinical & business services. Require all stakeholders, not isolated analysis.
Is Design the answer?

Where most designers are employed in healthcare today – Necessary, but not sufficient.
Zero diabetes armband concept
Mauro Amoroso

Timesulin insulin pen - courtesy Marcel Botha

Toshiba CT MRI scanner

Devices & Medical Products
Emerging Design Domains

Complexity increases at each stage

> Number of stakeholders
> Need for collaboration

*Multi-skill, multi-design, multi-disciplinary*

Healthcare services require all 4 domains of skill & knowledge.
System-level change crosses domains.

D3.0 & D4.0 are *stakeholder* driven.
Changes how we do process design.
Human-centred services in 4 domains

- Integrating clinical & community services
- Interventions for social determinants
- Community health promotion

- New business models
- Design & research for service innovation
- Clinical team coordination

- Patient experience of service
- EHR / information workflow
- Patient self-service
- Information seeking in care journeys

- Innovative & usable wayfinding
- Interior infection control
Need New Service Architectures.

Top-Down, Macro (Ecosystems)

- **Patient-Centred Care:** Organizing care for the patient (as whole person) Balancing workflow with personalized care.

- **Connected Care:** Integrating care across separate facilities Expanding geographic reach, while providing better locality Enabled by shared EMRs / IT platforms

- **Value-Based Care:** Measuring costs & outcomes for each patient. Bundled prices for the full care cycle.
Distributing Care Services Across Communities

- Adaptive organizations
- Models for service coordination
- Information inter-op, inter-connection
- Top-down & bottom-up services
- Smart routines (Serial & iterative)
Complex care is a design problem.

“Doctor as design thinker”

Here health is co-created value.

<table>
<thead>
<tr>
<th></th>
<th>Sequential</th>
<th>Iterative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mission</strong></td>
<td>Efficient delivery of known solution</td>
<td>Evaluation and management of complex care for difficult problems</td>
</tr>
<tr>
<td><strong>Beliefs and values</strong></td>
<td>An ideal exists</td>
<td>Ideal state is unknowable</td>
</tr>
<tr>
<td></td>
<td>Uncertainty is reduced before care</td>
<td>Uncertainty is reduced during care</td>
</tr>
<tr>
<td><strong>Scope of service</strong></td>
<td>Narrow</td>
<td>Diversified</td>
</tr>
<tr>
<td></td>
<td>Higher capacity (throughput)</td>
<td>Lower capacity</td>
</tr>
<tr>
<td><strong>Processes</strong></td>
<td>Standardized</td>
<td>Nonstandard, or no protocols</td>
</tr>
<tr>
<td></td>
<td>Assembly-line model</td>
<td>Job shop approach</td>
</tr>
<tr>
<td><strong>Management policy</strong></td>
<td>Centralized</td>
<td>Decentralized</td>
</tr>
<tr>
<td></td>
<td>Broad span of control</td>
<td>Narrow span of control</td>
</tr>
<tr>
<td></td>
<td>Reduced variation in performance</td>
<td>Improvements learned by variation</td>
</tr>
<tr>
<td><strong>Human resources</strong></td>
<td>Conforming, conservative employees</td>
<td>Problem-solving experimenters</td>
</tr>
<tr>
<td></td>
<td>Repetitive tasks</td>
<td>Development of new variations</td>
</tr>
<tr>
<td><strong>Technology</strong></td>
<td>Specialized</td>
<td>General purpose</td>
</tr>
</tbody>
</table>

**Case in point ...**

**Atrial Fibrillation Care**

Chronic & complex illness are *exceptions*.

Patients fall between the cracks & get fragmented care at many locations. By not adapting to the changing reality of chronics, costs rise as hospitals increase their exception cases.

Atrial Fibrillation System

Goal is prevention of serious CVD

Designed as an integrated practice across units.

Connected care model at system & patient experience levels.

Systemic, scalable to province.
A. AFib/Flutter Management: Acute Rate and Rhythm Control

**UNSTABLE**
- Acute CHF
- Hypotension
- New ischemic changes on ECG
- Altered LOC

**Duration ≤ 48 hrs**
- Synchronized cardioversion 150-200J biphasic

**Duration > 48 hrs**
- Judicious rate control can obviate the need for cardioversion – however if worsening or unable to control symptoms then, Synchronized cardioversion 150-200J biphasic

**STEP 3:**
- Proceed to Stroke Prevention
- Refer to Cardiology

**STABLE and HR ≤ 110**
- New onset or Paroxysmal

**Duration ≤ 48 hrs or after anticoagulated**
- Rhythm control strategy

**Duration > 48 hrs or High risk for stroke***
- AND not anticoagulated or INR < 2

**STEP 3:**
- See Rate Control Table

**Permanent**
- See Cardioversion Table

**STEP 1 DETERMINE IF VALVULAR DISEASE IS PRESENT:**
- If mitral stenosis or prosthetic heart valve is present, patient is classified as high risk and anticoagulation with warfarin is strongly recommended.
- Proceed to Step 3 to determine bleeding risk and choose warfarin for anticoagulation.
- If no valvular disease go to Step 2.

**STEP 2 DETERMINE CHADS2 SCORE:**
- CHF/LV Dysfunction: 1
- Hypertension: 1
- Age ≥75: 1
- Diabetes Mellitus: 1
- Stroke or embolism: 2
- TOTAL ___

**STEP 3 DETERMINE BLEEDING RISK:**
- Does the patient have:
  - Current or recent active bleed
  - Severe hepatic disease
  - History of intracranial hemorrhage (ICH)
  - Recent surgery
  - A terminal illness (active cancer)
  - Severe cognitive dysfunction
  - Severe renal disease/dialysis

- If YES to any of the above, we suggest not initiating anticoagulation in the ED; reassessment will occur during follow up.

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Human-Centred Systems

Bottom-up, Human-Centred, *Micro*

- **Design for Patient Experience**
  Care as experienced by the patient as person.
  (Can we do this systemically?)

- **Community Prevention**
  Working closely with communities to discover determinants
  Prevention & mitigation unique fit to context.

- **Communicative Therapy**: Communicating with people in their
  languages & media. Catalyzing new practices, such as coaching.
Today, services are moments of care ... Triggered by health-seeking, but not patient-centric

Health Seeking | Patient Journey

<table>
<thead>
<tr>
<th>Situation</th>
<th>Caregiving 2 Years</th>
<th>Health Incident 2 Months</th>
<th>Diagnosis 2 Weeks</th>
<th>Treatment 2 Days</th>
<th>Living With Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>Care Providers</td>
<td>Father's care team: surgeon, oncologist, pharmacist, chemotherapy nurse</td>
<td>Primary care physician</td>
<td>Attending physician</td>
<td>Cardiologist</td>
<td>Electro-physiologist</td>
</tr>
<tr>
<td>Touchpoints</td>
<td>Family and friends, Web, clinicians</td>
<td>Social media friends, doctor, pharmacy</td>
<td>ER, lab, insurance, pharmacy</td>
<td>Hospital, family, clinical team</td>
<td>Social media, health communities</td>
</tr>
<tr>
<td>Journey</td>
<td>Family caregiver</td>
<td>Primary care—initial diagnosis</td>
<td>Emergency care—cardiac diagnosis</td>
<td>Specialist care—cardiac treatment</td>
<td>Health community advocate</td>
</tr>
<tr>
<td>Patient Role</td>
<td>Caregiver/consumer</td>
<td>Ambulatory</td>
<td>Outpatient</td>
<td>Inpatient</td>
<td>Advocate</td>
</tr>
</tbody>
</table>
Human-Centred Service Design

Bottom-up  Systemic yet personal

• Patient side - Human-centred concerns: Mental wellness responsive to students.
• People don’t know what services are offered
• Fear or stigma associated with therapy
• Care complicated by other conditions, life situations
• Case study: OCADU Campus Mental Wellness

• Research modes: Ethnography, Dialogue, Public workshops
• Design methods: Service analysis, Blueprint, Journey, Mapping
OCADU Health & Wellness Centre – Service Flow

As-Is Service Blueprint
Promoting Resilience & Self-Management - A Student-Centred Perspective

LACK OF AWARENESS
- Current State
- Proposed New Interventions

UNCERTAINTY
- Promotional Posters
  - #mentalhealth
  - HWC Pop-ups with supported materials
- Reimagined online portal with FAQs
- Use of Facebook & Twitter Resources for Tips & Strategies

ISOLATION
- Higher State of Anxiety
- Reduced State of Anxiety

ACCESS TO SERVICES
- Welcome to the HWC

BUILD GREATER
- FACILITATE BETTER
- CREATE INCREASED

AWARENESS

UNDERSTANDING

CONNECTION

ACCESS TO SERVICES

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New Learning, New Designers.

MDes STRATEGIC FORESIGHT & INNOVATION
- Business & Design Thinking
- Human Factors
- Systemic Design / Systems Thinking
- Innovation Research Methods
- Strategic Foresight
- Innovation Strategy
- Business Model Innovation
- Strategic research with faculty & students

+ MDes DESIGN FOR HEALTH (2016)
Discussion

• Mayo Clinic is leading in service design. Norway leads in system-wide approaches. Why not Canadian institutions?
• Can we connect Policy > Systems > Services?
• What’s really missing today?
• Are you ready to engage clinicians, patients, agencies in “design decisions?”
• What do you believe is “best next?”
Design for Care: Innovating Healthcare Experience

designforcare.com

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