Planning for Change in an Era of Digital Transformation

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Planning for Change

Surgical Amphitheater, 1890

De Vinci Robotic Surgical System, 2010
Process Centered Care, 1950

Human Centered Care, 2010
Typical modern hospital layouts

Disease Treatment, 1960

Health Promotion, 2020

NØRR office and cultural center for health and well-being in Paris' Saint-Denis / Henning Larsen Architects
Central Mega Hospitals, 1970

Community Healthcare Centers, 2010
“Patient room of the future.” Designed by NXT, Clemson University, and Birdtree Design, 2013

Smart Hospital Design, 2010
Healthcare innovation in Israel: HealthTech countering COVID-19, Start-Up National Central and HealthIL, 2020
Smart Hospital of the Future
Digital Technologies, Service Innovation, and Hospital Design

- Models of care
- Medical services

- Healthcare
- Technology
- Architecture

- Digital Innovation
  - Telemedicine, AI, Robotics

- Planning & Design
  - Built Environment

UNIVERSITY OF CAMBRIDGE
Judge Business School

CDI
Centre for Digital Innovation

CDBB
Centre for Digital Built Britain

SHEBA
Tel HaShomer City of Health

ARC
Innovation at Sheba Medical Center
Study of Sheba MC in Collaboration with the University of Cambridge

- Sheba MC 200-acre campus
- 1900 beds (+500 for COVID-19)
- 160 medical departments and clinics
- 75 laboratories

Newsweek Declares:
For the 4th Consecutive Year!

Sheba is a Top 10 World's Best Hospital
New Model of Inpatient Telemedicine in the COVID-19 units

Control room at Sheba MC COVID-19 ICU overlooking the contaminated zone, Aug 2020
Remote Care by Telemedicine Technologies and Robots

The director of COVID ICU communicating with the staff from the control room. Dan Balilty for The New York Times, May 2020

Intouch Telepresence Robot
Managing Operational and Spatial Complexity

Medical staff in the control room of the COVID-19 ICU. Ynet, May 2020
Development of a Virtual Hospital

Hybrid Models of Hospitalization

Managing ‘Physical beds’ alongside ‘Virtual beds’ for continuity of care
Collaboration of physicians in the hospital with nursing services in the community

- Internal Medicine @ Home
- COVID-19 care @ Home
- Psychiatric care @Home
- Pediatric care @ Home
- Chronic Care @ Home
# New Hybrid Models of Care

## Modes of Delivery

<table>
<thead>
<tr>
<th>Location</th>
<th>PHYSICAL</th>
<th>VIRTUAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOSPITAL</td>
<td><img src="image1" alt="Intensive Care Unit (ICU) at Sheba MC" /></td>
<td><img src="image2" alt="Inpatient Telemedicine" /></td>
</tr>
<tr>
<td>HOME</td>
<td><img src="image3" alt="Home Hospitalization by Maccabi Healthcare" /></td>
<td><img src="image4" alt="Tele-Home Hospitalization" /></td>
</tr>
</tbody>
</table>

1. Inpatient Hospitalization
2. Inpatient Telemedicine
3. Home Hospitalization
4. Tele-Home Hospitalization
The Patient Journey
The Patient Journey across Physical and Virtual Care

Adapted from Clinic 20XX: Designing for an Ever-Changing Present, the UK Patient Survey. CADRE HKS, 2018
The Patient Journey across Hybrid Models of Care

Adapted from Clinic 20XX: Designing for an Ever-Changing Present, the UK Patient Survey. CADRE HKS, 2018
Patient-centered Design: navigating physical and virtual environments
System-centered Design: optimizing healthcare services

Conceptual proposal for the Wolfson Economics Prize 2021 by Femke Feenstra, Andrea Mohn, Johan van der Zwart, and Nirit Pilosof
Conceptual proposal for the Wolfson Economics Prize 2021 by Femke Feenstra, Andrea Mohn, Johan van der Zwart, and Nirit Pilosof
Collaboration across the Healthcare Ecosystem
Planning for Change in an Era of Digital Transformation

- Design for flexibility on multiple levels
- Resilience was enhanced by digital technologies
- Inpatient telemedicine holds value beyond COVID-19
- Potential to develop hybrid models of virtual and physical care
- Opportunity to transom hospitals as part of the healthcare ecosystem
Publications


Thank You