Key factors and their implications for the design of the future healthcare architecture

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Architectural challenges beyond COVID-19

Looking at the increasing natural and anthropogenic hazards, an overall reconsideration on responsiveness and strategies aimed at improving the resilience of hospitals is needed.

Strategic objectives during Covid-19 experiences:

• increase flexibility and adaptability of buildings and the overall network of physical structure and services

• think of interventions that guarantee speed and efficiency, and especially an adequate quality even in extraordinary conditions

• integrate the response to the emergency into the ordinary planning of the physical structures and services
Key factor 1: Facilities and territorial healthcare network

Potentialities of the reorganization of the health care facilities on a territorial level:

- **differentiate** the types of buildings according to the services to be delivered by **assigning a level of severity**
- ensure greater **capillarity and accessibility** of services following a process of **decentralisation**
- **allow a greater capacity to manage the pandemic** decongesting the facilities
- strengthen **home care** through advanced diagnostics and telemedicine
- reduce the service gap between rural and urban areas, constituting a **driving force for development**
Key factor 2: Architecture and new technologies

Potentialities of the technological innovation (AI, IoT) and digitalization of the physical structures and services

- **dematerialization** brings to new design paradigms for functions, spaces and requirements
- more **versatile and dynamic use** of space (robots and cameras, sensors, etc.)
- optimization of **patient and healthcare staff flows** (smartphone apps, sensors, etc.)
- reduction of **space crowding and waiting** times (touchless check-in, smarphone apps)
- reduction of **direct medical examination** and increase in remote healthcare (telemedicine)

⚠️ Necessity to consider **potential barriers** to their use
Key factor 3: Ward convertibility

Preparation of an emergency plan that identify inside the hospital convertible units that according to different scenarios allow to functional reorganization of flows and access by operating the necessary changes to space, technological systems and organization.

- **Main design recommendations:**
  - configuration of divisible units according to modularity
  - planning of access, flows, and connections
  - implementation of adaptable technological systems
  - strategic positioning of the units and the provision of additional spaces
  - planning of a universal patient room
  - single-patient rooms able to accommodate 1 or 2 additional beds

Case study
Azienda Socio Sanitaria Territoriale Santi Paolo e Carlo, Milan
**Key factor 4: Buffer zones**

Buffer zones designed according to adaptability and dimensional and technical requirements suitable for emergency uses. Depending on the structure and the urban context, in case of a pandemic, some types of spaces become underused - sanitary spaces (wing, department) non-sanitary spaces (hall, gym) - and therefore can be recovered for emergency use.

- **Main design recommendations:**
  - consider accessibility and mobility connections
  - provision of basic technological systems for additional temporary service modules and the arrangement of prefabricated structures
  - possibility to accommodate lightweight structures to facilitate entry, screening and waiting

**Case study**
Hospital del Mar, Barcelona
Key factor 5: Temporary prefabricated units

Temporary additional elements (tents or prefabricated modules) can provide an incremental provision of services as an extension of the building. These units can be used for the functions of entrance, waiting and sorting, first aid, triage and be placed outdoor of the hospital (entrance square, porches, parking lots, etc.).

• Main design recommendations:
  - adequate organization of the external spaces suitable for the accommodation of the temporary units
  - setting of the temporary modules requirements easily available and compatible with current production
  - adequate levels of environmental quality, dimensional standards, economy, ease and speed of installation and integration with technological systems.

Case study
CURA Pods, Turin
THANK YOU FOR YOUR ATTENTION

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