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Delineating the Need of Policy Guidelines for Home Hospitalization/Isolation to Facilitate the Evolving Architectural Paradigm

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Abstract

This paper focuses on identifying the need to evaluate and contextualize the guidelines and policies that inform space design solutions pertaining to home hospitalization in urban residential environments; for all ages and medical conditions.

According to medical research when patients with chronic conditions receive effective health management in an integrated system, with home-treatment support, they recover faster and better. Home hospitalization can reduce the burden on hospitals as well as decrease the cost of care and even prevent development of bacterial resistance due to prolonged hospital stay.

Today technology-enabled healthcare companies are offering sophisticated critical care at home, including advanced facilities like respiratory services, palliative care, cancer support services, post trauma/ accident care and specialized rehabilitation services. This scenario urges to bring all aspects of home hospitalization to the forefront of architectural narratives.

Home Healthcare has characteristics that are very different from those of the hospital. The biggest hurdle that stands in the way is

the dove-tailing of advancements made by medical science with space and services design interventions (provided by architects and designers) so as to enable effective 'hospital-like' care at home.

This paper also takes an integrated look into the domain of home hospitalization in urban Indian context along with reference to global trends. The need identification and evaluation for guidelines and policies in this evolving domain will form the basis for development of requisite space design and planning benchmarks which have become need of the hour, more so, during the current pandemic.

KEYWORDS: *Home hospitalization, Healthcare Architecture, Home healthcare, Guidelines, Pandemic*

Wellbeing and Healthcare: Hospital-like Care within Home for people of all ages and abilities

Home is a place of comfort and freedom of expression, movement and existence. Home is also a place of solace, healing and recuperating. When it comes to designing a space for a person with disability or limitation owing to age or ill-health, safety, simplicity and adaptability are added parameters to facilitate an effective wayfinding. Patients with chronic conditions requiring long-term care aspire to lead a life of dignity and autonomy, in environs they are most familiar with: their homes. Their progressing age also increases the incidence of disease and disability.

Addressing the issues of healthcare and social needs of a rapidly growing elderly population coupled with medical care of chronic

patients is stretching the limited human and physical resources to their limits. In times of spiraling healthcare costs due to ageing population, growing incidence of lifestyle diseases and the prevailing pandemic, home hospitalization provides an obvious and cost-effective approach to reduce burden on hospitals. It can further decrease cost of care and prevent development of bacterial resistance due to prolonged hospital stay.

According to National Institute for Health and Care Guidelines, a patient's wellbeing may be maintained and enhanced through ensuring a 'sense of being at home' assisted by healthcare technologies by empowering those wishing to age-in-place or otherwise. Rendering hospital like care at home for patients of Alzheimer's, dementia, stroke induced disability, bedridden elderly with physiotherapy needs gives them the ability to age in place with dignity. After all, there is no place like home.

Architect Parul Kumtha who is committed to inclusive architecture in public places and private homes, in an interview (Patients Engage: News and Views, 2020), on her recommendations on design considerations for way forward and future improvement, stated a two pronged agenda – "there needs to be more advocacy and push from persons with disabilities and simultaneously, there needs to be scaffolding and support by way of rules and regulations from the government. Both of these will enable designers to automatically ensure that all design is accessible".

Extending health monitoring from hospital to home environment should not be seen as a replication of the same monitoring procedures and methods of the home environment, because the home environment has characteristics that are very different from those of the hospital in terms of medical facility, human

resources, the medical knowledge of operator, and other factors (Jeong et al., 2012). Thus, the solutions provided for home healthcare need to be devised in order to adapt to change in situations, unforeseen events and newer information.

Global Trends

Recent trends in health care favor alternatives to traditional acute care in hospitals owing to various factors. These include overcrowding of hospitals and emergency departments; rapid advancements in telehealth technologies that enhance the ability of clinicians to observe patients, conduct examinations and exchange information at distance; increased consumer expectations for better care experiences; and pressure from payers to develop high quality, less-expensive alternatives to hospital care. Hospital at-home care, which is generally defined as clinical services provided in association with acute inpatient care in the community, is such an alternative. (Jeff, 2009)

The Centers for Medicare & Medicaid Services (CMS) has outlined unprecedented comprehensive steps to increase the capacity of the American health care system to provide care to patients outside a traditional hospital setting amid a rising number of coronavirus disease 2019 (COVID-19) hospitalizations across the country. These flexibilities include allowances for safe hospital care for eligible patients in their homes (CMS, 2020).

“In March 2020, CMS announced the ‘Hospitals Without Walls’ program, which provides broad regulatory flexibility that allows hospitals to provide services in locations beyond their existing walls. CMS is expanding on this effort by executing an innovative Acute Hospital Care At Home program, providing eligible hospitals with regulatory flexibilities to treat eligible patients in their homes. This program was developed to support models of at-

home hospital care throughout the country that have seen prior success in several leading hospital institutions and networks, and reported in academic journals, including a major study funded by a Healthcare Innovation Award from the Center for Medicare and Medicaid Innovation (CMMI).” (CMS, 2020).

In many countries, programs in which hospital care is provided in the patient’s own home continue to be a popular response to the increasing demand for acute care hospital beds. Patients who received care through such programs, after assessment in the community by their primary care physician or in the emergency department, may avoid admission to an acute care ward. Alternatively, patients may be discharged early from hospital to receive hospital care at home. (Shepperd et al., 2009).

These programs hinge around providing an alternative to hospitalization, thereby cutting costs, reducing the risk of acquired infections associated with time of stay in hospital and the added benefit of receiving rehabilitation in home environment. In his article, Hagland writes that hospital and health system leaders are responding to the call, and taking advantage of an important opportunity—an opportunity for certain types of patients for whom the healthcare delivery system can effectively care for them better at home, thus improving their individual experiences, as well as conserving on expensive health system resources and improving clinical outcomes simultaneously. These programs also ensure that the care given to patients is tailored to their particular needs and, at the same time, makes life easier for family caregivers. Everyone wins—the patients, the clinicians, the hospitals, and the payers. It could prove to be a significant win in the ongoing shift to value in our healthcare delivery system. (Hagland Mark, 2021)

According to the Emergency Conditions Committee of The Facility Guidelines Institute, New York (FGI, 2021, March) the 2022 FGI Guidelines for Emergency Conditions in Health and Residential Care Facilities will establish new minimum requirements for health and residential care facilities. The intent of this new standard is to provide designers, owners, and authorities having jurisdiction with design requirements and guidance – for new construction and renovation projects – specific to preparedness to meet emergency conditions. The report further states that, “the design of the built environment is a crucial part of establishing a quality of care that promotes safety. Stakeholders involved in the design and construction of healthcare facilities can play an active role in incorporating safety measures into the physical condition of care settings, whether newly constructed or undergoing renovation”.

Understanding the Urban Indian Context

For the purpose of this paper, the scope has been limited to demographic data of NCT (National Capital Territory of Delhi). Based on the data given in Draft Master Plan of Delhi 2041 (MPD, 2041) NCT Delhi accounts for about 1.39% of India’s population and is also one of the most populous cities in the world. Likely shifts in the demographic profile of the city indicate a significant increase in the proportion of persons in the age group of 60 years and above, signaling the need for specific provisions for the elderly in the Plan. The Plan also acknowledges diversity and works towards creating an inclusive city that facilitates accessibility and opportunity for all.

As per “Apollo Homecare” the geriatric (60 plus) population is expected to grow to 325 million by 2050, doubling from 8.6% in

2011 to 16% by 2041. India currently has around 60 Million diabetics, a number that is expected to swell to 90 Million by 2025. It is also estimated that every fourth individual in India aged above 18 years has hypertension. Lifestyle disorders are on the rise due to a combination of rising incomes, accelerated pace of urbanization and increased life expectancy.

India's hospital bed density is less than half the global average of 3 hospital beds per 1,000 population, implying that an estimated 2.2 Million beds will be required over the next 15 years to meet the growing demand for healthcare. (Sarwal R et al., 2021, March) While the adoption of home healthcare solutions in India is currently at a relatively nascent stage, it has tremendous potential for growth in the future on account of rising elderly population in the country, increase in the incidence of chronic diseases, enhanced demand for constant personalized care as well as the emergence of nuclear family structures in urban areas (Sarwal R et al., March 2021).

Driven by the changing clinical (tele-medicine and tele-diagnostics), economic (increasing per capita income) and societal (nuclear family structure) milieu the demand for healthcare at home is gaining pace.

Hospital in Home

According to NITI Aayog (Sarwal R et al., March 2021) home healthcare is unique not only because care is provided at home, but is also usually less expensive, more convenient, and can be just as effective as the care given in a hospital. Changing consumer mindset is now trending towards comparing healthcare

with other services, with access to healthcare at the place and time of their convenience.

Home Healthcare has characteristics that are very different from those of the hospital in terms of medical facility, human resources, medical knowledge of the operator, availability and maintenance of medical equipment, architectural readiness of areas to be retrofitted and various other factors. This domain still remains largely unaddressed in the Indian context.

The COVID-19 pandemic is likely to provide an impetus to the expansion of the home healthcare market in India. Mitigating the risk of virus spreading to high-risk residents, storage space for oxygen cylinders and concentrators, vertical transport of medical equipment etc. have been challenging issues urging a viable solution. With social distancing established as the new norm and hospital visits becoming riskier; telemedicine solutions are fast emerging as a convenient alternative.

Home healthcare saves on real estate and infrastructure as the model effectively operates at 15%-30% reduced costs in comparison to hospital expenses for similar treatment. It is estimated that home healthcare has the potential to replace up to 65% of unnecessary hospital visits in India and reduce hospital costs by 20%, as per the NITI Aayog report (Sarwal R et al., March 2021).

Many large hospitals are now offering support for post-operative care along with extensive continuum of care at home, including advanced facilities like respiratory services (home ventilation), sleep apnea care, palliative care, cancer support services, post trauma/ accident care and specialized rehabilitation services

(such as pulmonary, neuro, and cardiac rehabilitation; speech therapy). Additionally, end-of-life services are on offer for terminally ill patients as well as personalized care plans formulated in conjunction with doctors. Even the previously unthinkable advanced care such as haemo dialysis and chemotherapy are now making their way into the home healthcare arena.

Challenges: The Role of Architects

Architectural design targets mainly humans, the lives of whom are dynamic and continuously changing. To make building designs more cost-effective, time-effective, energy-effective and function-effective, more careful planning and detailed exploration are needed. Such an informed futuristic planning helps reduce risk, minimize maintenance, optimize solutions, and sustain quality to achieve a balance between the user, client, stakeholders, community, and building goals (Eilouti, 2018).

Maintaining a balance between addressing the health and wellness of the elderly with their need to age with dignity and independence will be one of our biggest social and economic challenges in the years to come. The issue of dove-tailing the advancements made by medical science with design interventions (provided by architects and designers) which enable hospital-like care at home call for an in depth study and analytical outcomes. The evolving architectural paradigm beckons a look into the current and projected requirements over the next decade in the following areas:

- *Ergonomic requirements to enable safe and hazard free home hospitalization.*
- *Guidelines for FF&E, surface finishes and materials.*

- ***Evaluation of MEP services to facilitate use of equipment required for critical care and provision of necessary services.***
- ***Inclusive design architecture for differently abled and senior citizens.***
- ***Retrofitting an isolation area in residential setting, while enabling interface for provision of manpower, services and equipment.***
- ***Categorization or typology of homecare depending upon the type and severity of disease/ailment/disability.***
- ***Preparedness of the physical infrastructure.***
- ***Need to mitigate in house accidents by installing better lighting, streamlining floor designs, the inclusion of grab bars and addition of accessible stair climbers.***
- ***Integration of state-of-art systems to hook up home hospitalization with the nearest health care facility for real-time remote monitoring.***

The evolving scenario urges for an interdisciplinary approach to some fundamental questions:

- i. How prepared are residential premises for delivery of in-place healthcare solutions?***
- ii. What are the differences in characteristics of home environment from those of the hospital?***
- iii. What are the demographic and epidemiological trends that are likely to boost the demand for healthcare at home as well as influence the nature of health services in the years to come?***
- iv. What can be done to retrofit an existing space to function closer to an AII (Airborne Infections isolation) room?***
- v. What are the cost implications of retrofitting a room to enable home hospitalization?***

Conclusions and Recommendations

The main target of architectural design is the 'User'. During the course of a lifetime, human physiology is ever changing, more often than not, for the worse. Consequently, architecture should be approached dynamically with considerations to address the challenges faced by users of all age groups and abilities.

Furthermore, a shift in the policy agenda is needed from talking about ageing-in-place towards exploring the importance of space and place within the context of ageing-at-home. Relatedly, researchers and practitioners from technology, healthcare and social science cannot continue to work in relative silos. (Creaney R., Reid L. & Currie M., 2021).

Particularly during, and as a result of, the COVID-19 pandemic, there is an urgency for interdisciplinary research to augment the resilience and wellbeing of our communities and ageing populations.

The area of study of architectural interventions for home-hospitalization is relatively new and calls for a comprehensive assessment and in depth study to lead to an initial or preliminary framework to inform the expanding and diversified knowledge base of the topic as it continues to develop.

This paper aims to emphasize and propagate discussion around better understandings of what it means to design spaces that enable delivery of healthcare at home with the help of emerging technologies in the context of ageing and/or recovering at home. To conclude, time has arrived for developing a comprehensive policy guideline specific to Indian milieu and undertake future research aiming towards encouraging greater debate in the area of home hospitalization/isolation.

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