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Designing for the heart: How architecture shapes cardiac care

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“Form follows function” has always been a strong concept in architectural design. In a facility such as a hospital, however, form and design go beyond aesthetics. The layout and functionality of these buildings shape how care is delivered, how patients experience their stay, and how confidently clinical teams can respond when every minute matters.

This is especially true for cardiac hospitals, which bring together advanced technology, highly specialized teams, and patients who may be critically ill or anxious. Accordingly, the success of these establishments depends not only on medical expertise but also on an environment that helps clinicians work safely and effectively.

The measure of a successful cardiac hospital is therefore not simply how it looks, but how well it works. Thoughtful design can make complex care easier to deliver while helping patients and families feel supported. Clear routes, well-planned clinical spaces, and an environment that feels calm rather than overwhelming can support safer care and a smoother patient experience. Good design gives clinicians room to focus on the person in front of them, rather than the obstacles around them.

As such, functionality needs to be considered from the very beginning of the design process. Architecture, engineering services, clinical workflows, technology, and human needs should be planned together—not addressed separately or left to be resolved later. When these elements work in harmony, the building becomes an active part of care and treatment, helping services run safely, efficiently, and responsively.

Cardiac care requires sophisticated facilities, and translating that complexity to utility is key to the smooth functioning of these facilities. The challenge, then, is to place the right capabilities in the right locations, supported by the people, systems, and infrastructure needed to make them work well together to serve the patient.

These principles have been built into the design of the Rwanda Egypt Heart Center (REHC). The center also looks beyond the specialist hospital through the Village Integrated Plug-In (VIPI), extending its approach to care beyond the facility itself.

The clinical layout of a facility like the REHC must reflect the way care is delivered. Operating theatres, catheterization laboratories, intensive care units, and imaging departments need carefully planned relationships, safe circulation routes, well-positioned equipment, effective infection-control measures, and clear lines of sight.

Small decisions can make a real difference, determining whether staff can reach a patient quickly, see monitors clearly, find essential supplies, communicate easily, and move without crossing busy or restricted routes. When these details are considered early, the physical environment supports the clinical team instead of getting in its way.

A hospital must work for its staff as well as its patients. Clinicians need an environment that helps them do demanding work consistently, without adding avoidable strain. Long walking distances, poorly placed workstations, noise, limited daylight, and inadequate staff facilities can all add to fatigue.

By contrast, sensible layouts, convenient access to equipment, spaces for focused work and rest, and opportunities for natural light can make demanding shifts more manageable. Designing for long-term performance means recognizing staff wellbeing as part of the hospital's overall effectiveness.

This matters especially in the rapidly changing landscape of cardiac care, where services often run around the clock, and close teamwork across disciplines is essential. Advances in imaging, minimally invasive and structural heart procedures, hybrid operating environments, and patient monitoring are changing what hospitals need to provide.

A cardiac hospital should be ready for these changes, rather than being designed only around today's equipment and practices. Adaptable rooms, accessible building services, flexible infrastructure, and well-planned technical areas can make it easier to introduce new technology and reorganize services without major structural work. Planning for change from the outset helps to ensure that the facility continues to serve its patients over time.

The article by Backhaus and colleagues in this issue is therefore a timely and welcome addition to the literature. Rather than treating architecture, engineering, clinical workflow, and human needs as separate problems to be solved in sequence, it shows how they can be resolved together, and it does so with a clarity that will be valuable to clinicians, planners, and designers alike. Its contribution lies not only in describing an ambitious facility, but in modelling a way of thinking: that a cardiac hospital should be designed around the care it delivers, the people who deliver it, and the patients and communities it serves, both now and for decades to come. In cardiac care, form follows function, and function, ultimately, follows the patient.

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