

Hospital design, crime, and fire risk in Kolkata

Kolkata hospital disasters: Design failures, Building Code lapses, and the Crime–Fire Link

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Abstract

Hospitals and similar public buildings are crowded. Storage spaces for toxic and flammable substances are places of acute stressors. The risk of a hospital is high when the design, approval and day-to-day management are not in accordance with the National Building Code (NBC) of India and state rules like West Bengal Municipal (building) Rules. Obstructing exits, blocking hallways, leaving basement doors unguarded, and failing to protect the wards allow fires and violent crimes to happen and escalate. This study presents two selected incidents to investigate the situation regarding these risks in a private hospital and in a Kolkata public hospital. The first incident is the 2011 AMRI Hospital fire, where 89 to 93 people died as a result of the illegal stocking of flammable materials in the parking basement. The second incident relates to the rape and murder of a trainee postgraduate doctor at R. G. Kar Medical College and Hospital, 2024. The Management of R.G. Kar Medical College and Hospital did not enforce proper access control and had weak CCTV coverage. The conclusion of the research about the hospitals' space in Kolkata states that hospitals' land area and bed capacity do not conform to the Indian Public Health Standards (IPHS), while corridors and exits conform with NBC. This article compares the camps of the Kolkata government medical college with two well-functioning examples: the Tata Medical Center, Kolkata, and AIIMS, New Delhi. According to the IPHS standard and those two examples, a prestigious government medical college of Kolkata has much less land per bed. Overcrowding, low doctor-population ratio, change-in-use of internal spaces and inadequate spending on security and fire safety in the government hospitals of West Bengal have largely caused the current outbreak. The study deals with the legislative framework governing hospitals, the mismatch between regulations and their implementation and ends with some policy suggestions relating to hospital design, campus planning, legal compliance and accountability.

Keywords: Hospital design, NBCS, Kolkata, R.G.Kar Medical College, AMRI Hospital, Fire

1. Introduction

Hospitals in India, particularly in Kolkata, need to comply with a wide range of design and safety rules. These consist of the National Building Code of India 2016 (Part 4: Fire and Life Safety), state rules such as the West Bengal Municipal (Building) Rules, 2007, Kolkata Corporation Building Rules, Environmental Compliances, the West Bengal Fire Services Act, environmental rules, and the letter from the Ministry of Health and Family Welfare (MoHFW) on fire and life safety in hospitals. Issued originally in 2020 and revised in 2026, MoHFW guidelines build on the NBC 2016 as well as the guidelines of the National

Disaster Management Authority. Although such rules are in place, there are numerous official inquiries, court cases, and media articles show that compliance is partial, delayed, and sometimes systematic non-compliance.

This paper asserts that fire disasters and crime incidents on hospital premises stem from the same reason, namely, design as well as regulatory rules are transgressed almost always because of inadequate space standards, change in use, and staff crunches in Kolkata hospitals. When the wards, corridors, the basement as well as staff areas are not built, equipped or managed having regard to beds, the same gaps that enable a fire to spread will also enable the unauthorised to move around. The incidents at G. Kar Medical College and the 2011 AMRI Hospital fire are not isolated but represent a systemic failure of institutional designs. Although the two events took place 13 years apart and caused different types of harm, their origins both emanate from a lack of enforcement.

The structure of the paper is as follows. The hospital building rules in West Bengal are explained in Section 2. Section 3 examines whether the AMRI hospital fire can be seen as a failure of fire safety. Section 4 examines the R. G. Kar Medical College case as an instance of breach of access control. Section 5 compares space standards for Indian and Kolkata hospitals with respect to per-bed area, land area, and corridor size, using good-practice examples. Section 6 relates both instances to the larger narrative of overcrowding and resource constraints in government hospitals in West Bengal. Section 7 makes a direct comparison of the two cases. Section 8 presents policy proposals, and Section 9 ends.

2. Rules that govern hospital buildings in West Bengal

After hospital disasters in Kolkata, six types of certifications related to design are in practice.

1. The Kolkata Municipal Building Rules and Regulations
2. The National Building Code of India 2016, Part 4, which refers to Fire and Life Safety. The code sets standards for number and width of exits, the distance people need to travel to reach them, fire-safe sectioning of buildings. Further, it mentions what fire detection and suppressing systems are required.
3. The national code is applicable to the State of West Bengal, and the height-based fire rules were added in 2007. According to Section 12(6)(B), buildings above 14.5 metres must include fire and life-safety features. Also, Sections 82 to 84 permit officials to intervene when a building is unsafe.
4. According to West Bengal Fire Services act, Hospitals should get Fire Safety Certificate/No Objection Certificate (NOC) and renew it regularly otherwise they will be facing legal action.
5. The Ministry of Health and Family Welfare (MoHFW) has released Guidelines for Fire and Life Safety in Healthcare Facilities. This revision in 2026 makes the hospital administrator directly accountable for any non-compliance to fire safety rules. Along with this, hospitals need to comply with the laws regarding waste, air and water use. Similarly, such violations can lead to pollution, and legal consequences.
6. Environment guidelines includes waste generation and management air quality water usage Not complying with such standards can create pollution hazards and legal consequences.

One observation that frequently comes up after incidents: that the MoHFW Guidelines are advisory in nature, whereas, every healthcare facility must comply with the national, state, and local fire safety laws. This forms a gap. No single authority can deal with irregularities of a hospital to the extent that it can shut it down for breaching the rules, the fire NOC is treated as a once in a lifetime activity. According to reports on the 2026 revision, many hospitals still do not have updated fire NOCs or not required to conduct fire drills post the 2011 AMRI fire.

The regulatory requirements line up closely with what went wrong at AMRI and R. G. Kar. The NBC requires at least four independent exits for buildings of this type, but the post-incident review at AMRI found this rule ignored; corridors and stairwells became single points of failure filled with smoke. State building codes do not allow storing combustible materials in parking basements, but AMRI's basement was illegally converted into storage for flammable waste. The height-linked safety rule for buildings over 14.5 meters applied to AMRI's seven-story annex, which met only part of the requirement. Fire detection, alarm, and suppression systems are required under the NBC and NOC conditions, but AMRI's smoke detectors and sprinklers were not working when the fire broke out. At R. G. Kar, the MoHFW guidelines and hospital security procedures call for restricted, monitored access to rest and clinical areas, especially at night, but the seminar hall used as an informal rest area had no controlled access, and CCTV coverage could not capture the incident. The same guidelines call for adequate CCTV coverage of isolated areas; cameras exist, but do not cover enough ground, and fuller coverage in the seminar room might have captured the incident. Finally, hospital disaster plans require emergency infrastructure to stay functional, but the R. G. Kar emergency building, was still out of use a year later, with services shifted to an already strained trauma building. Table 1 summarises the principal statutory requirements applicable to a multi-storey Kolkata hospital and contrasts them with the ground realities documented in the cases examined in this paper.

Table 1. Regulatory requirements for hospital buildings vs. documented ground realities in Kolkata case studies

Minimum 4 independent, remote exits for assembly/institutional occupancy	NBC 2016, Part 4	AMRI Hospital: exit provision described in post-incident review as ignored in practice; corridors and stairwells became smoke-filled single points of failure
Restriction on storage of combustible/flammable material in basements designated for parking	WB Municipal (Building) Rules, 2007	AMRI basement (designated for car parking) was illegally converted into storage for flammable material, including medical waste and chemical drums
Height-linked fire and life-safety systems for buildings over 14.5 m (Sec. 12(6)(B))	WB Municipal (Building) Rules, 2007, S.12(6)(B)	AMRI's seven-storey annexe building complied with only a subset of the applicable safety-system requirements
Functional fire detection, alarm and suppression systems	NBC 2016 / Fire NOC conditions	Smoke detectors and sprinkler systems at AMRI were non-operative at the time of the fire
Restricted, monitored access to clinical and rest areas, especially at night	MoHFW Healthcare Facility Guidelines; hospital security SOPs	R. G. Kar: seminar hall used as an informal rest area lacked controlled

		access; CCTV coverage was insufficient to capture the incident
Adequate CCTV coverage of sensitive/isolated areas	MoHFW guidelines; state security audit directives (post-2024)	Spokesperson testimony: cameras exist but coverage is insufficient , poor illumination level,had there been adequate cameras in the seminar room, the incident could have been fully captured
Functioning emergency/trauma infrastructure maintained and protected	Hospital Disaster Management Plan (MoHFW 2026 guidelines)	RG Kar emergency building, remained non-functional a year later, with services shifted to an already strained trauma building

Sources: compiled by the author from various sources (2011 AMRI Hospital fire); AMRI Hospital Fire Case Study (Scribd, 2020); Medical Dialogues (2026); Outlook India (2026); The Federal (2025).

3. Case study I: The 2011 AMRI hospital fire

3.1 What happened

On the morning of December 9, 2011, a fire broke out in the basement of the AMRI Hospital (Fig 2)annex in South Kolkata. The fire killed 89 individuals, although other accounts put the death toll as high as 93. Authorities said this fire started due to a short circuit and rapidly spread as highly flammable material was stored illegally in the basement. At the time of the fire, 160 patients were admitted, including 50 in ICU. A total of 55 people died by midday, with a continued rise in the following days. The victims would have suffocated and not burnt to death, as per post mortem. Authorities discovered that the unsafe storage of flammable materials, substantial alterations to the sanctioned designs, and inadequate fire safety provisions, which contravened several codes, were the key factors. Due to the presence of central air conditioning in the hospital, fumes from the toxic smoke present in the basement were sucked into the ducts and released in the patient areas. Most of the fire remained confined to the basement area but the smoke in all the rooms and hallways caused mostly death by asphyxiation. Many patients died in their sleep or escaped too late.



3.2 Design and regulatory violations

Post-fire reviews revealed multiple breaches of rules specified within Section 2. The hospital had illegally converted its basement parking area into storage for flammable material, including medical waste, and did not follow rules that required four exits. After the event analysis revealed that the fire protection system was nonworking. The smoke detectors had failed and the air-conditioning damper was not working. If were working, it would have prevented suffocation deaths. The staff reported that they had never received any training in fire safety and evacuation and had not practised with the emergency systems. They did not report the fire for 90 minutes and waited a further hour before beginning any rescue. Warning signs from past fire audits and another judicial inquiry both proved the hospital violated codes by using the parking for unauthorized storage for dangerous goods. Thus, it can be inferred that the change –in –use from the original design had been the root cause of the entire incident.

3.3 Accountability

The hospital's managing director and others were prosecuted for culpable homicide and attempted culpable homicide and violations of the West Bengal Fire Services Act. The managing director's charges were downgraded to rash and negligent acts on appeal. Hospitals received closure orders, compensation, and audits from authorities. Following the fire, hospitals across the nation audited the major hospitals in Delhi and Mumbai where fire-prevention measures were missing. Mumbai's 383 high-rises flout fire-safety rules; 60 per cent of those in Gurgaon lack renewed fire clearance. Architects address fire safety compliance. Years later, hospitals without valid fire clearance were common. The deadly blazes in Bhubaneswar, SCB Medical College, Rajasthan and Kolkata where patients died or were evacuated show that regulatory gap identified in 2011 still exists despite of new fire-safety norms.

4. Case study II: R. G. Kar Medical college and hospital (2024)

4.1 What happened

A medical student of R. G. Kar Medical College and Hospital, Kolkata, was found dead in a seminar hall. An autopsy would later confirm she had been sexually assaulted. She was on a tiring 36-hour shift at that time. A case that caused nationwide protests and strikes by resident doctors and suo motu intervention from the Supreme Court of India.

After the body was found, the principal of the medical college was resigned due to junior doctors protests. Later he was transferred to another state-run medical college. The case has been ordered to be transferred to the CBI over doubts by Calcutta HC regarding local police investigation. On August 20, 2024, the Supreme Court took up the matter on a suo motu basis. A while later, a mob vandalised the hospital during a protest which led to deployment of Central Industrial Security Force (CISF) in the hospital.

4.2 Design and security failures

The AMRI inferno unveiled lapses in fire safety codes. At R. G. Kar Hospital(Fig 1), security was so bad that there was no access control or surveillance or separation between public and staff area which exposed doctors and nurses to risk. The Supreme Court discovered deficiencies like open staff areas, a lack of toilets, and inadequate security arrangements such as CCTV and guards. The public was able to move unrestricted during the night, through most of the hospital. The CCTV coverage had many blind spots and wasn't enough. Better coverage might have documented key events. The R. G. Kar building remained unrepaired after a year of vandalism and this compelled emergency services to enter the trauma building which caused confusion. Due to CISF making the gate more secure on the other side of the road, the core

infrastructure issue along with overcrowding remained as it is resulting in a tense situation for the staff, and patients.

Fig1- R G Kar Medical College and Hospital



Source - [www. https://newsonair.gov.in/](https://newsonair.gov.in/)

4.3 The National Task Force and Supreme Court responses

In a significant move, the Supreme Court of India constituted a ten-member (NTF) on 20 August 2024. The task force aims to improve safety and working conditions of doctors and strives to make the necessary tasks happy through various recommendations. The NTF, which is seeing more and more effective cooperation from the provinces, has been tasked with developing action plans and interim and final reports about violence. It includes gender-based violence against health workers. All states and doctors' associations are to receive NTF's report, said the court. The measures taken pertained to preventing violence, working safely and sexual violence. The Court pointed out many issues like clarified shift regulations absent, inadequate resting places, poor sanitation one, weak security one, and doctor's excessively long shift. Most recommendations are still unfulfilled even after a year. The Supreme Court kept on pushing for action, while many states informed about lack of progress. The 2011 AMRI fire backdrop saw audits that did not stop hospital tragedies in its aftermath.

5. Space standards for hospital design and campus planning

Sections 3 and 4 reviewed what happens when the design and security features are not followed, such as exits, basements and CCTV coverage. How much built and open space a hospital with given number of beds should have according to India's planning norms? This question is more fundamental than it seems. It also assesses major hospitals in Kolkata in relation to these norms and well-known examples of good practice. Sites and buildings of inadequate size are not a minor issue. The IPHS, NBC and MoHFW norms

have specifically designed them as a safety issue. They are non-compliance design because adequate spaces are not an optional extra.

5.1 Per-bed and Departmental space norms (IPHS)

The Indian Public Health Standards (IPHS) for Sub-District and District Hospitals are the Ministry of Health and Family Welfare's benchmark for secondary-care government hospitals. Last updated in 2022, they set floor-area and clearance requirements for inpatient and critical-care areas. Table 2 shows these standards.

Table 2. IPHS floor-space norms for inpatient and critical-care areas

Space / Element	IPHS Norm
General ward bed space	7 sq m per bed
Minimum distance between centres of two beds	2.5 m
Clearance at the foot end of each bed	1.2 m
Hospital ward (in-patient) floor space	15–18 sq m per bed
High Dependency Unit (HDU) floor space	20–24 sq m per bed
Paediatric ICU floor space	10–12 sq m per bed
ICU floor space (incl. bed support services)	25–30 sq m per bed; ICU beds = 5–10% of total beds
Window/ventilator opening area	Minimum 20% of floor area (same wall); 15% (opposite walls)
Operation theatres	1 OT per 50 general in-patient beds; 1 OT per 25 surgical beds

Source: IPHS Guidelines for Sub-District and District Hospitals, Ministry of Health & Family Welfare (2012 revision, consolidated in the 2022 edition).

The same IPHS document sets minimum requirements for site area and built-up area based on the number of beds, as shown in Table 3. These numbers are important for this analysis. If a hospital site is too small for its bed count, it is forced to use basements, corridors, and other informal spaces that were never meant to handle such use, as seen at AMRI and, in a different way, at R. G. Kar.

Table 3. IPHS minimum land area and plinth area norms by hospital size

Hospital Size	Minimum Land Area (Desirable)	Plinth Area Norm
Up to 100 beds	0.25 – 0.5 hectare ($\approx$ 0.6 – 1.2 acres)	80–85 sq m/bed (general); 100–110 sq m/bed (teaching hospital)
101–200 beds	0.5 – 1.0 hectare ($\approx$ 1.2 – 2.5 acres)	Same plinth-area rate, scaled by bed count

Hospital Size	Minimum Land Area (Desirable)	Plinth Area Norm
500 beds and above	6.5 hectares ($\approx$ 16.1 acres): 4.5 ha for hospital + 2 ha for staff residences	Same plinth-area rate, scaled by bed count

Source: IPHS Guidelines for District Hospitals (101–500 bedded), Ministry of Health & Family Welfare.

According to the IPHS hospital bed construction costs, almost 30% of the costs are allocated to the provision of beds in hospitals. The required built-up area for the G. Kar Medical College and Hospital would be around 166000-183000 sq.mts. (about 1.8 to 2 million sq.ft). There's much more space than a 12- to 27-acre urban campus can usually accommodate with its roads, courtyards, parking, hostels and staff housing. This calculation is merely an illustration, and not an official IPHS figure for hospitals of this size, since the published IPHS land area categories stops at "500 beds and above" ending up with a scale mismatch. In fact the minimum IPHS land standard for a 500 bed hospital (6.5 hectares, or about 16.1 acres) gives more land per bed than is available at several busy medical college hospitals in Kolkata.

5.2 NBC corridor, egress, and fire-compartmentation standards

Apart from bed-strength land norms, the National Building Code's hospital fire and life-safety rules, based on NBC 2016 Part 4, set minimum sizes for circulation spaces directly relevant to the AMRI case. Corridors and passageways must be at least 2.4 metres wide and high. Exit corridors must be at least as wide as the combined width of the exit doorways they lead to. Corridor walls must block the spread of smoke, toxic gas, and heat, and transfer grills are banned in corridor walls or doors. Basement staircases must be enclosed, fire-resistant for at least 2 hours, located at the edge of the basement, and reachable from the open air at ground level, positioned so that smoke from a basement fire cannot block exits on upper floors. This is the exact rule AMRI broke, since smoke from its basement reached the floors above. Protected staircases must be pressurised if they serve a floor area over 500 square metres, and must never connect to an unpressurised corridor, lobby, or staircase. Every part of a building, including basements, needs sprinklers and an automatic fire detection and alarm system linked to a central control room, the exact systems that had failed at AMRI in 2011. These NBC numbers compare well with international standards. The U.S. NFPA 101 Life Safety Code requires healthcare corridors for patient beds to be at least 2.44 metres wide, almost identical to the NBC's 2.4-metre minimum. India's standard already matches international practice; the failures described in Section 3 happened because the standard was not followed, not because the standard itself was weak.

5.3 Best-Practice campus examples

Two well-documented campuses, one in Kolkata and one a leading national institution, show what well-planned, compliant space provision looks like.

Tata Medical Center, Kolkata: Tata Memorial Hospital is a 2011-built facility in New Town, Rajarhat built on a 13-acre site by the Tata Trusts in collaboration with the Tata Memorial Centre, Mumbai. The first phase of the hospital spreads across approximately 300000 square feet. The finished two-phase campus, which was completed by 2019, covers an area of 52,609 square metres, with a built-up area of about 20,420 square metres and has 427 beds which has almost been completed. Currently, 431 beds are available today, of which 75 per cent are for general category and subsidised patients. At the heart of the campus is a central courtyard which is the main gathering space and gardens that nurture through family

patient clinician interaction Structures can harness breezes and reduce glare according to the climate of Kolkata. The staff accommodation is adjacent to the main hospital block. Future expansion, which has been planned for more than 800,000 square feet, will maintain the original courtyard as the campus's hub. Occupying 13 acres, the land use of the 431-bed facility gives about 0.030 acres or roughly 1300 sq. ft. per bed. This is far more than what is available at many older government medical colleges in Calcutta. Further, it is equal to or slightly more than the IPHS prescribed land area for a 500-bed hospital. Not long after the start of Phase I, the director of the hospital reported that about 30% of patients were being turned away for lack of space, with some waiting two months for surgery. As demonstrated by this, the advanced care demand around Kolkata is greater than that satisfied by even a well-funded private hospital, and space standards must be considered as part of capacity planning (Section 6), not in place of it.

AIIMS, New Delhi. AIIMS Delhi is a national reference here rather than Kolkata's example, as it happens to be one of the most documented hospital campuses of India and demonstrates the scale of land given to top government institutions. The original campus at Ansari Nagar occupies about 194 to 213 acres, depending on which neighbouring plots are taken into account, and has around 2,478 beds before the expansion. The redevelopment project is taking place in 121.65 acres of the main campus. The main campus is supported by a second campus, which is AIIMS-II. AIIMS-II is located in Jhajjar, Haryana and covers an area of 330 acres. The main objective of AIIMS is to add about 3,000 more beds. Furthermore, a 300-bed emergency department with more than 90 operating theatres is another objective. Above all, transformation will be like a single "medical city" and not piecemeal. On the other hand, growth has taken place like building towers over more than sixty years at our own building. This has led to the original campus has been described as a leak basement, ventilation issues, incomplete air-conditioning in some buildings, etc. in our documents.

Even with the most cautious numbers preceding any expansion, AIIMS Delhi has a land per existing bed of about 0.08 to 0.09 acres. This is two and a half to three times the land per bed estimate for Tata Medical Center. Further, it is way more than that at some of the busy government medical colleges in Kolkata. The redevelopment documents of AIIMs themselves point to step-by-step tower additions without a master plan as the root cause of the infrastructure problems now being fixed. This planning failure, we link to the older government medical college campuses of Kolkata below.

5.4 Benchmarking Kolkata's government hospital campuses

The R. G. Kar Medical College and Hospital complex in Kolkata spans approximately 25 to 27 acres, though the exact area is not made available. Using the higher estimate of 27 acres, this rises to about 0.016 acres, or roughly 710 square feet, per bed. Both figures fall far below Tata Medical Center's 0.030 acres per bed, AIIMS Delhi's 0.08-0.09 acres per bed, and the IPHS desirable minimum of about 0.032 acres per bed for a 500-bed hospital. R. G. Kar, whichever estimate is used, has far less land per bed than either best-practice example and falls below the IPHS-recommended minimum once its actual bed count of about 1,663 is considered. This helps explain the informal use of space described in Section 4, for instance, a seminar hall used as an unsecured overnight rest area because the campus lacks enough formal space for its patients and staff.

6. Population pressure on West Bengal's government hospitals

In both case studies, the public hospital system in West Bengal operated under significant capacity constraints. Proximity to these limits heightens the risk that design and security shortcomings may result in adverse outcomes; however, such strain alone does not directly cause fires or injuries. Elevated health

risks are primarily attributed to patient overcrowding, staff fatigue, and unregulated foot traffic.

6.1 Doctor and bed ratios

According to government data from 2018, there was one doctor per 10,411 people in West Bengal, and hospitals had one bed per 1,170 people, indicating heavy overwork public doctors. The ratio was marginally better than the national average at the time, which was one doctor per 11,082 people, but still a lot behind the WHO's recommendation of one doctor per 1,000 people. Overall, hospital beds in West Bengal have grown only marginally against population growth. In 2022, the state had 97,000 government hospital beds, up from 96,012 in 2019. But this marginal rise has not kept pace with demand. Especially, at major hospitals including medical colleges. India's national average of just 0.55 government hospital beds per 1,000 people is relevant.

6.2 Effects of overcrowding on hospital safety culture

As per the field survey conducted in government hospitals of Kolkata, safety of both patients and staff suffers when hospitals become overcrowded. A study in 2022, based on interviews across five government hospitals in Kolkata and one suburban hospital, found that assaults by patients' relatives on doctors and nurses have become commonplace both before and during the COVID period. The study attributes these factors to social and institutional pressures in already overcrowded public hospitals. These pressures weaken the relationship between health workers and people. The R access-control failure is related to, but does not duplicate, this pattern. G. According to G. Kar, chronic overcrowding leads to minor violence against staff on a frequent basis. On the other hand, poor design or unmonitored or unsecured areas can lead to rare but serious incidents. The risk of fire is increased. When hospitals operate at or above intended capacity, they use up basements, corridors, and a landing in the stairwell for storage, extra beds, or equipment. This was the set-up at AMRI in 2011, as noted in Section 3.2. Fire-safety audits thereafter have found similar conditions at other facilities across the country.

7. A shared causal pathway

The two selected case studies have a similar structure despite difference. The AMRI incident involved fire that caused mass casualties. G. Kar was a case of murder and sexual assault. The unauthorized conversion of a parking basement for flammable storage, along with non-functional fire systems and inadequate exits, caused AMRI to fail primarily. The rest area being accessible to all, hardly any CCTV coverage and weak institutional monitoring were core failures at R.G. Kar. AMRI was guilty of violating several laws, including the Building bylaws and the fire service act, suffered control failure. R. R.G. Kar has violated the healthcare safety guidelines and institutional security procedures of MoHFW. The situation was aggravated by the absence of statutory Resident Doctors' Association bodies. At R. G. Kar, there were generic raised concerns from various sources over undefined space layouts, safety, security and absence of CCTV, which denied point. The AMRI incident resulted in the suspension of the hospital's licence and criminal prosecution of the hospital management under IPC and Fire Services Act. After R. G. Kar's principal was sacked, CBI took over the investigation, CISF was deployed, and accused was convicted and sentenced to life imprisonment in January 2025. AMRI resulted in sector-wide fire-safety audits in 2012 and later on fire and life-safety guidelines issued by the MoHFW in 2020 and revised in 2026. R. G. Kar led to an apex court case and to the formation of a National Task Force in 2024 and the court is still monitoring state compliance. As per the last updates, a similar hospital fire was reported in Bhubaneswar at SCB Medical College, Rajasthan, and Anandalok Hospital in Kolkata. In the same manner, the report of the task force is delayed, the emergency building

at R. G. Kar continues to be non-functional one year later and there are no established statutory RDA bodies.

The investigation of fire incidents with crime-related incidents reveals a unique and different pattern when compared to examining each entity alone. A hospital designed to NBC and state regulations allows movement in a controlled and monitored way. Every zone in the hospital has a purpose, an approved occupancy limit, and monitored entry and exit. A building will be termed as not complying when the function of the designated use breaks. For instance when basement use for storage, when seminar hall becomes an unsupervised lounge, when security systems only on paper. The same openings in the ductwork at AMR that allowed smoke to pass freely also permitted an unauthorized person to enter R's isolated space. G without interference, G.Kar. The purpose for which both buildings were built was not served by them. It is unwise to overstate this argument. While the immediate causes of sexual violence and fire risk are different, the ultimate cause of design failure does not fully explain either. A design defect is exploited or spared due to human intent, institutional culture, staffing decisions, enforcement priorities. It is more defensible to say this: that where hospitals depart from the design rules, the probability of both harms clearly increases. For more than 10 years now, Kolkata hospitals are in non-compliance, as highlighted publicly several times. Rather than a few rotten apples, it's an enforcement issue of broader scope.

8. Policy and design recommendations

8.1 Fire and structural safety

The licencing of AMRI would have been suspended based on violations, and therefore, the report stresses that a fire audit needs to be carried out at every government and private hospital every year without warning. At the NOC renewal stage, fire detection and suppression systems should be inspected by an independent party and not the hospital itself since many hospitals in the country have been found operating with expired clearances. According to the expert, hospitals that have central air conditioning and were built before the NBC revision of 2016 must undergo smoke-compartmentation retrofits, so that smoke does not spread from the air duct as was the case with AMRI.

8.2 The need for Building Audits.

A Building Audit(BA) refers to regular checks of the building construction, fire safety, electrical installations, and continued adherence to the approved use. Audits are important for two reasons. First, the buildings are often modified after occupation without the required permission, extra partitions and floors added, fire exits blocked and parking turned into storage. If audits are not conducted from time to time then these changes go unnoticed until the situation causes damage. In addition, structural elements as well as fire-fighting equipment. An occupancy-safe building can, after ten years without checks, have broken fire hydrants, inoperative exit signs, or weakened beams from a leak or rust. Regular inspections help detect these issues at an early stage, particularly where occupancy exceeds the level the building can carry.

8.3 Post-occupancy compliance.

Having the occupancy certificate doesn't end compliance. The owners must keep the building compliant with fire code and safety standards for as long as it is used. Fire exits which are locked and fire extinguishers which are expired can become deadly lapses at the time of a disaster. Regular and compulsory inspections conducted frequently would help in avoiding negligence. It's cheaper to repair things than to redo them. Most catastrophes happen due to overlooked non-compliance, not unforeseen.

Audits should be made mandatory and undertaken with independent follow-ups as a necessity and not a suggestion.

8.4 Capacity and liveability.

India must decide whether to build more hospitals to meet the needs of our growing population or to update our hospital design guidelines. If standards are not revised, building new hospitals now could lead to lower occupancy rates and require even more hospitals in the future. The current regulations were created for a different era, and following them now will only create ongoing shortages. Carrying capacity is a key concept here, it refers to the maximum number of people or uses a space can support. As India's population increases, available space will eventually run out, regardless of how it is managed. Instead of focusing only on occupancy and bed counts, a Livability Index (LI) provides a better measure of hospital quality. This index considers airflow, room size, accessibility, comfort, and the experiences of staff and patients. A hospital might meet basic occupancy rules but still have substandard spaces and fittings, which can cause serious problems over time. Reform and expansion are not opposites. It is important to recognize the real limitations of space, which will become a problem if ignored. Therefore, design guidelines must be based on carrying capacity and livability.

8.5 Space-Standard compliance in campus planning

There should be regular inspection of every medical campus for adherence to the land-area and plinth-area standards as per IPHS (Sections 5.1, 5.2). The Health and Family Welfare Department, West Bengal, must publish a public report of every institution that shows the gap. A hospital that does not meet the IPHS land area required per bed norm applicable to its size will not add new beds until such time that hospital gets more land or offloads patients to district hospitals that have a spare capacity. There should be a single master plan for each campus, either the courtyard-based phased plan of Tata Medical Center or the integrated "medical city" model now being adopted at AIIMS Delhi. Otherwise, an unplanned growth of towers and annexes will occur. Case studies and many documents of AIIMS itself highlight this as a reason for infrastructure and security issues.

8.6 Security and Access-Control design

Coverage of CCTV in all clinical rest areas, seminar halls, and isolated areas of all government medical colleges should be at the statutory minimum standard and should be audited by an authority independent of the hospital administration. Inside every medical college in West Bengal, a statutory resident doctors' association bodies should be set up within a time frame, as per the doctors' representatives, the oversight on this which led to the culture of intimidation that caused the 2024 incident. Following any act of vandalism, the top priority should be restoring and protecting the emergency infrastructure that damage done. Not informal and open-ended shifting of services to already overburdened departments.

8.7 Capacity and structural investment

Funding should proceed in a phased manner to bridge the gap between available beds, doctors and the population needs (Section 6). The most important priority would be medical college hospitals which take in the most referrals from other districts. The ongoing expansion of the Critical Care Block at several West Bengal government medical colleges should be audited for fire safety and security design. Further, space standards should be ensured under the Indian Public Health Standards (IPHS). Otherwise, these new facilities run the risk of repeating design flaws already found in older buildings. The recommendations made by National Task Force in 2024 for improving hospital safety and working conditions should be implemented in full. They must also keep giving periodic compliance reports to the Supreme Court or a similar body.

9. Conclusion

The 2011 AMRI Hospital fire and the 2024 R. G. The G. Kar Medical College case occurred thirteen years apart and involved different forms of harm in different kinds of institutions: one a private and the other a public. Despite these, in both cases, there was a clear violation of building plans and of fire, security and space-planning norms in hospitals already choking. According to the land-area-to-bed analysis in Section 5, such problems often arise at the master-planning stage when a campus is too small for the number of beds it will hold. Based on the AMRI incident, both hospitals' regulators and courts undertook several measures, including a probe and revision of National Guidelines following the Supreme Court R case. G. Kar and a National Task Force have recommended these changes, but they were slow, incomplete, or disputed years later. Hospitals in Kolkata must follow simple design rules. The land and building area should comply with the number of beds. The hospital must not exceed its safe limit and carrying capacity. Entry must be regulated. Fire safety systems must operate. There must be many exits. Every year, the building must be inspected by an expert committee. Liveability also matters. Patients and staff are aided through good ventilation, adequate space and comfort and movement. The regulations pertaining to hospital buildings should be reformulated. The new rules ought to have livability index. This index must evaluate air quality, space, comfort and convenience of movement among others. Making these checks part of the rules will help keep hospitals safe and comfortable for all. Simply put, these do matter. Preventing future fires, crime, overcrowding and other issues make development plans essential.

Acknowledgement:

Grammarly has been used to help proofread this article for spelling and grammar mistakes and also to generate AI and plagiarism check reports.

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