

# Identification of Environmental Cleaning and Managerial Best Practices for Integration in Competitive Bidding Documents for Outsourcing of Housekeeping Services in Tertiary Care Hospitals in India

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## Abstract

**Aim:** This study aimed at the identification of environmental cleaning and managerial best practices for integration in competitive bidding documents for outsourcing of housekeeping services in tertiary care hospitals in India. **Materials and Methods:** This study design was cross-sectional. The sample comprised of tender documents of eight government super-specialty hospitals/corporations and housekeeping contract agreements of five private ones. Convenience sampling was used-current tenders of most popular government hospitals available online and housekeeping agreements of consenting popular private hospitals were considered. Excel sheet was used for the analysis. **Results:** Hospitals outsourced housekeeping services on performance or human resource basis, use risk classification (23%) of hospital areas for determining intensity of cleaning, and outlined scope of services (50%). Fifteen percent tenders provide comprehensive lists of material. Scrubber requirements ranged from one per 25–250 beds. In 40% tenders, scope included handling of biomedical waste. Workforce included managerial cadres. There is a focus on occupational health and safety. Quality assurance is inbuilt in the contracts including bid evaluation criteria for selecting competent agencies and penal provisions such as in case of adverse report (INR 10,000) and unsatisfactory survey reporting (1% of monthly payment). **Conclusion:** Since successful outsourcing must focus on above-mentioned parameters, this study provides necessary guidance for health-care administrators for patient satisfaction, positive image, reducing hospital-acquired infections, and ensuring provision of quality care services.

**Keywords:** Competitive bidding, health-care facilities, hospital, housekeeping, workforce, outsourced services, sanitation, services

## INTRODUCTION

It is an established fact that environmental cleaning reduces hospital-acquired infections and patient length of stay. However, many low- and middle-income countries still lack access to basic water, sanitation, and hygiene services.<sup>[1]</sup> Infrequent cleaning, shortage of disinfectants, water, and staff are encountered.<sup>[2]</sup> Many hospitals also lack cleaning protocols, supervision, and training.<sup>[1]</sup> In India, housekeeping services have been outsourced in many public hospitals. Outsourcing requires robust contracts to ensure quality control and acceptable performance by outsource agency. Auxiliary services such as cleaning are one of the most obvious targets for cost savings.<sup>[3]</sup> Services are outsourced to gain

access to quality service.<sup>[4]</sup> Results of the studies on the costs and benefits of outsourcing have been mixed.<sup>[5]</sup> However, studies have demonstrated that outsourcing is associated with a greater incidence of hospital-acquired infections.<sup>[3,6]</sup> Others have shown lesser infections with modified cleaning

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protocols by nursing staff compared to cleaning and disinfection procedure performed by outsourced cleaning services.<sup>[7]</sup> Studies to evaluate differences in health-care facility cleaning practices have been conducted;<sup>[8]</sup> however, to our knowledge, studies on integration of the best environmental cleaning and managerial practices with outsourcing contracts are lacking. Therefore, to improve environmental cleaning, improvements in organization, infrastructure, and operations of housekeeping services need to be made. As part of the Indian Health Ministry's efforts to improve housekeeping through robust outsourcing, this study was conducted to identify best practices that can be built into the contracts to ensure acceptable outcomes.

## MATERIALS AND METHODS

A descriptive, cross-sectional study was conducted from August 2014 to October 2014 in India in an apex tertiary care hospital for the Ministry of Health and Family Welfare as part of larger study to develop the guidelines for outsourcing of housekeeping services in public hospitals. Since the study was envisaged to identify existing best practices, the study population comprised of most popular public and private hospitals where such best practices were anticipated to be prevalent. A list of top 10 public and private hospitals were prepared. Convenience sampling was used, current tenders of most popular government hospitals available online, and housekeeping agreements of consenting popular private hospitals were considered. Based on the availability of housekeeping tender or contract agreement documents and consent to participate, eight government super-specialty hospitals/corporations and five private super specialty hospitals were included in the study. The names of the hospitals have been kept confidential. Out of eight tenders of government hospitals, two tenders were combined tenders by state corporations. The various aspects of tenders were analyzed to identify best and contemporary housekeeping practices.

## RESULTS

Contracts were performance and/or human resource based. Prequalification criteria mandated financial capacity (no loss in last 3 years, solvency and turnover) and experience in two to three similar works in the last 3 or 5 years were required. Requirement of a well-developed management information system was found in the combined tender for multiple hospitals.

### Risk classification

Hospital areas have been classified into functional risk areas based on risk of infections to patients, occupational health, and safety of occupants in 23% of tenders. Very high-risk areas include critical areas, labor room, endoscopy, dialysis, special baby units, and high risk or immunocompromised patient wards. High-risk areas were maternity, surgical, isolation, emergency, radiation therapy, chemotherapy, children's play areas, and Central Sterile Supply Department. Moderate risk areas included all other inpatient wards laboratories, radiology,

entire outpatient, physiotherapy, pharmacy, and mortuary. Low-risk areas were administrative area, record storage, engineering workshops, external surroundings, central stores, library, meeting rooms, and staff change facilities. Very low-risk areas were telephone rooms or exchanges and electrical and mechanical engineering areas. Frequency and intensity of cleaning were graded as per risk classification.

### Scope of services

Overall, scope of the services that were addressed by more than 50% of tenders included cleaning of patient beds and side tables, wall and tiles, door and handle, glass and glass partition cleaning, window glasses, toilets/restroom cleaning, tube lights, floor scrubbing, O. T. floors, walls, examination bed, dust bins, electrical switches/fittings, telephone and computer, railings, staircase, dust cleaning from linen/book/file shelves/curtains, upholstery, grills, floor polishing, floors of lifts, exhaust fans, ceilings, cobweb cleaning, roads, garbage/waste collection, spill management, cleaning during water floods/overflow in outer areas, pest control, green areas, office floor, chair, and office furniture cleaning. Other scope included few tenders were cleaning of dirty utility/sluice room, sputum mugs and urine pots, drinking water area, fans, door mats, disinfection of O. T. floor, walls and mattress, cleaning of critical equipment, water tanks, basements, terrace, parking area, foliage or pebbles in outer areas, cleaning during construction works, internal open areas and shaft, cleaning of fire fighting equipment and gas pipelines, signage, A. C. vents, fixed glass panes/structural glazing/ext. mosaic and opening choked manholes, cleaning services during natural calamity/disaster, and provision of plastic mugs by the outsource agency. In 40% tenders, handling of biomedical waste was included in the scope from collection to and final disposal at common biomedical waste treatment facility along with provision of color-coded refuse bags and trolleys for transport.

### Housekeeping material

In 15% tenders, comprehensive lists of material were detailed. The agency was required to maintain floor cleaner, bathroom cleaner concentrate, buckets, cleaner/sanitizer concentrate, floor cleaner, disinfectants, dusters, floor polish, furniture polish, gloves rubber (heavy duty), mild acid, multipurpose cleaner, naphthalene balls, plastic scrubber, room air fresheners, sanitary cubes, scrub pads, stain remover, steel polish, toilet brush with three side bristle, yellow duster, coconut broom, floor duster, glass and hard surface cleaner, and toilet bowl cleaner. Either brands (15% tenders) or generic names (15% tenders) of material was mentioned while performance-based tenders (23% tenders) required eco-friendly, biodegradable material of standard specifications of international quality. In one state corporation tender, agency was required to deposit cleaning material amounting to Rupees INR 35,000 per month per site.

### Housekeeping equipment

The various mechanized cleaning equipment required in specified quantities are enlisted in Table 1. Costs of machine maintenance were borne by the agency.

**Table 1: Type of cleaning equipment and their quantities**

Type of cleaning equipment	Ratios
Scrubbers	One per 25-250 beds
Heavy-duty/ride on/walk behind/single disk scrubber	
Vacuum cleaner	One per 50-300 beds
Double bucket wringer trolleys	As per requirement
High-pressure jet cleaners	One per 100-300 beds
Steam cleaner	One per 200 beds
Polishing machine	One per 500 beds
Other equipment	Not mentioned
Road sweeper	
Small battery-operated scrubber machine	
Compact spray and extraction machine	

### Organization of housekeeping services

Hospitals required adequate personnel including supervisors for effective operation or required work plan indicating floor and shift wise deployment. Others specified the minimum number of human resources or workforce requirement, but payment was based on floor area basis (divided into critical and noncritical). In tenders done for the group of hospitals, one head of operations (PG degree, 20 years' experience in facility management) provided the leadership. One assistant head of operation (PG, 10 years' experience) was deputed for every six hospitals and one facility manager (diploma in hospitality, 3–10 years' experience) at each hospital. One housekeeping sanitation staff (skilled, 1–2 years' experience) was employed for every 3.2 beds on average (range 1–7.5 beds). One supervisor (graduate, 5–7 years' experience, and 2 years in health care) controlled 20 staff (range 15–27). One hospital had a separate toilet cleaning squad while another had deep-cleaning/washing gang. Plumber, equipment operators, on call carpenter, and sewer cleaner were other staff deployed.

### Occupational health and safety

Personal protective equipment (PPE) and vaccination for staff were required in 30% of tenders.

### Quality assurance

One tender required daily reporting of staff in all shifts, functional status and utilization of equipment, washing undertaken, material used, report of cleaning from on prescribed format, monthly feedback from users on Key Performance Indicators. A centralized complaint reporting and redress mechanism should be available. Complaints redressed must be certified by the complainant.

Appropriate financial (INR 100 to INR 5000) penalties were imposed in case of worker not found in proper uniform, absenteeism/under deployment (25% of the amount payable), no photo ID, unsatisfactory performance, machine out of order, wrong/improper chemical used, absence of supervisor, duty for more than one shift in 24 h, failing wholly or partly to carry out assigned job, any loss/theft of property (recovery), smoking/drinking/sleeping, complaints of shortcomings, nondisposal of waste and when complaints were not registered

or not redressed, staff engaging in some other work or unruly behavior, improper handover of duties, absence of PPE, adverse report (INR 10,000), or any other breach, violation or contravention, bribery in the hospital and staff or patient satisfaction survey reporting-unsatisfactory (1% of total payment for the month).

### Bid evaluation criteria

Weighted scoring criteria were used in three tenders to shortlist agencies with better technical capacity in addition to providing services at competitive costs [Table 2].

### DISCUSSION

Outsourcing is usually done for noncore activities to be carried out effectively and efficiently by competent agencies. The outcome-oriented outsourcing strategy starts with the selection of such competent agencies, operational excellence, and monitoring. Research has suggested contracting to enterprises that specialize in health-care cleaning, which have sufficient human and financial capabilities to enter the bid process and successfully deliver the service. This would increase competition in the bidding process, encourage innovation, and strengthen contestability by replacing those providing low-quality services.<sup>[3]</sup>

Quality- and cost-based selection uses a competitive process that takes into account the quality of the proposal and the cost of the services in the selection of the successful firm. Cost as a factor of selection is used judiciously. The relative weight to be given to the quality and cost is determined depending on the nature of the assignment.<sup>[9]</sup>

Among the scope of housekeeping services, waste management, hospital hygiene maintenance, pest control, and sanitation are included. Bedside lockers and exhaust fans have been found dirty during inspections of hospital wards.<sup>[10]</sup> Effective control of hospital infections requires good housekeeping which includes cleaning of walls, floors, window panes, sills, screens, tables, curtains, fixtures as a scheduled programme at predetermined intervals with the use of appropriate disinfectants.<sup>[10]</sup> The statutory obligation of biomedical waste management may be covered under scope as also found in other studies.<sup>[11]</sup> In hospitals, plumbing backup is urgent and important because otherwise, it can create a situation that puts patients' health at risk. Any small backup is an urgent problem. Large- or medium-sized hospitals have proper engineering services while smaller hospitals employ one or two technicians. Hence, requirements of plumbers and minor maintenance may be projected in tenders. Health-care settings must devote adequate resources, including human resources to support infection control program, enable written procedures for cleaning and disinfection of client/patient/resident rooms and equipment; education and continuing education of cleaning staff; extraenvironmental cleaning capacity during outbreaks and on-going review of procedures.<sup>[12]</sup> Current vector control interventions face serious challenges, including increasing insecticide resistance,

**Table 2: Weighted criteria for evaluation of bids**

Evaluation criteria	Score (marks) or weightage (%)		
	Hospital - B	Hospital - C	Hospital - F
Technical capacity	Minimum score for qualification - 60 marks		
Weightage to technical capacity	50	70	60
Financial annual turnover of agency		20	20
Availability of human resource		10	20
Past performance	20	20	20
Experience in similar work		20	
Managerial capability - core team already available for monitoring operations			20
Observance of labor laws	20		20
Number of personnel earlier engaged with ESI*, EPF			
Certification from national/international bodies/institutes		5	
Equipment	20	10	
Experience in waste segregation	10		
Experience in the waste disposal	10		
Experience in rodent management	20		
Technical presentations on work plan or methodology		15	Display of staff, questions

ESI: Employee's state insurance, EPF: Employee Provident Fund Scheme. \*Significance: Indicate legal compliance and human resource capacity

rapidly expanding arboviral and other diseases, and the impact of climate change on vector distributions. To respond to these issues, there is an urgent demand for innovative vector control products and the development of new tools and approaches. The World Health Organization has evolved its approach to supporting the development, evaluation, and adoption of new vector control products and tools. Review functions for these products, previously carried out by the WHO Pesticide Evaluation Scheme within the Control of Neglected Tropical Diseases department, are being transferred to the WHO Prequalification Team. Prequalification Vector Control ensures that vector control products and public health pesticides active ingredients are effective, safe, and meet stringent quality and manufacturing standards.<sup>[13]</sup> In the present study, neither chemical composition nor concentrations of cleaning material was detailed, and findings are inconclusive.

Since health-care environments should pose minimal risk to patients, staff and visitors, division into functional areas is based on the level of disinfection requirements into high, moderate, and low-risk areas, and these areas require appropriate cleaning frequencies, levels of monitoring, and evaluation. Methods, frequency, and efficacy of cleaning practices affect the risk of acquisition of pathogens.<sup>[14]</sup>

Daily cleaning activities recommended include mopping of floors and horizontal surfaces, wet dusting of furniture, and fixtures. Cleaning and disinfection of high touch surfaces such as door knobs, bedrails, and light switches should be done on more frequent basis. Periodic cleaning of doors, windows, window frames, sills, ceilings, walls, etc., on a weekly/fortnightly basis and whenever required is recommended. This also includes washing of corridors, staircases, toilets and bathrooms, cubicles, rooms with water, and detergents.<sup>[15]</sup> The key performance parameters include building elements, fixture elements, equipment elements,

and environmental elements required freedom of dust, grit, and dirt. However, it is virtually impossible to influence quality because agreements are usually based on the outcomes of visual cleaning indicators.<sup>[16]</sup> In a comparison study of the four methods to assess cleaning (visual inspection, microbiologic methods, fluorescent markers, and adenosine triphosphate assays) adenosine tri-phosphate (ATP) bioluminescence and fluorescent markers are being preferred to aerobic plate counts because they provide an immediate assessment of cleaning effectiveness. However, although ATP is a quick and objective monitoring method, it is poorly standardized with low specificity and sensitivity in detecting bacteria, and the fluorescent marker was the most useful because it mimicked the microbiological data better than ATP.<sup>[17]</sup>

The requirements of minimum qualification and training will ensure that cleaning is proper. The responsibility for ensuring that the standardized cleaning practices are adhered to lies not just with the person performing the task, but also with the direct supervisor and management of the department or agency providing the cleaning service. To that end, it is important to incorporate elements of quality improvement into the program, including monitoring, audits and feedback to staff and management. In our study, reporting is used for quality assurance. In a study in Jordan, the most frequently used strategy for monitoring was the regular meetings with the supplier.<sup>[18]</sup>

The housekeeping organization hierarchy in hospitality consists of managers, housekeeping executives, housekeeping in-charge, supervisors, and attendants. Percentage of employees at different tiers is 16% managers, 26% supervisors, and 58% sanitary attendants. Required qualification for manager is hospitality diploma or bachelors, for in-charge graduation is also considered, for supervisor is

diploma/undergraduate, undergraduate and for sanitary attendant it is undergraduate.

The present study revealed that one housekeeping sanitation staff was employed for every 3.2 beds on average and one supervisor controlled 20 staff. Workload-based staffing calculations have been suggested considering the cleanable area, activity standards, area classification, and cleaning frequency.<sup>[19]</sup> In a comparative study in hospitals of Spain and Brazil, workers were responsible for the daily cleaning and hygiene of an average of 20 beds in rooms occupied by patients. The difference between workload and work satisfaction was significant since the Brazilians showed more weekly hours, and Spaniards were satisfied with their work.<sup>[20]</sup> The requirement of sanitary attendants in a geriatric ward is 4 for a 30-bedded tertiary care center for all three shifts as per Operational Guidelines for National Programme for Health Care of the Elderly given by the Ministry of Health and Family Welfare.<sup>[21]</sup> Adequate staffing is paramount for both better services and staff satisfaction.

Although the tenders speak of the areas to be cleaned and minimum workforce minimum requirements, none clearly spells out the roles and responsibilities of each category of the staff.

Formal training is required to produce both managerial and nonmanagerial personnel in housekeeping. The education programs should emphasize appropriate use of PPE, appropriate cleaning and/or disinfection, aseptic practices, and use of antimicrobial agents. The educational programs should be evaluated and synchronized with the audit findings.

Health-care settings must have easily accessible PPE, appropriate to the task.

To ensure the desired results and reduce financial costs, there must remain in place a secure method to hold the contractor to an agreed upon standard of excellence. A team must monitor activity and share frequent reports, reviewing performance indicators on a set basis to yield a transparent view of the improved process. Hospital administrators also monitor the absenteeism of housekeeping staff.<sup>[22]</sup> A great outsourcing business case also includes details of operational performance indicators and timeframes.<sup>[23]</sup> It is important to incorporate the elements of quality improvement into the program, including monitoring, audits, and feedback to staff and management. Concerned authorities in the hospital should be involved throughout in the conduct of the contract and continuously monitor the performance of the contractor.<sup>[24]</sup>

## CONCLUSION

To conclude, the study has identified many best practices that can be built into the tender documents. Tendering can be based on quality-based selection (in addition to cost) will ensure outsourcing to competent agencies. It should focus on availability of trained personnel and managerial capacity, equipment, past performance, and experience.

Risk classification of hospital areas will help in determining the intensity of cleaning, level of staffing, and training of housekeeping personnel. The scope of services of outsourcing agency will ensure end-to-end solution including provision of material and housekeeping equipment in adequate quantities (such as one scrubber for every 25 beds). Mechanized cleaning will ensure better working conditions and efficiency. Average staffing ratio of one personnel for every three beds and one supervisor for every 20 personnel will improve satisfaction and service quality. The tender should also fix responsibility on outsourced agency regarding occupational health and safety through trainings and provision of vaccinations and PPEs. Quality assurance in the form of reporting, complaints management and penalties for indiscipline, absence from work, equipment downtime, and poor satisfaction with services built into contracts will hold the firm accountable and improve the services. Since successful outsourcing must focus on above-mentioned parameters, this study provides necessary guidance for health-care administrators in hospitals for patient satisfaction, positive image, reducing hospital-acquired infections, and ensuring provision of quality care services.

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## Conflicts of interest

There are no conflicts of interest.

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