Combined roles of IPC and Engineering in revitalization of healthcare facilities

Elizabeth Schoeman

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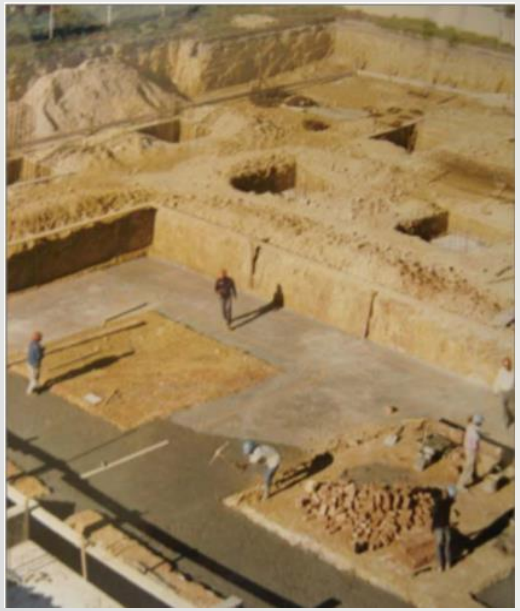
Revitalization

Definition

- To give new life, energy, activity, or success to something
- Making things better

Cambridge Dictionary



33 Years of changes…

Reasons for revitalization

- Advances and changes in treatments and services offered
- Removing the presence of harmful/unsafe materials e.g. asbestos
- Physical structure is old or outdated
- To improve energy efficiency or ventilation
- Amendments to regulations
- Maintaining level of care or income - sustainability

SHETH, A.Z., PRICE, A.D.F. and GLASS, J., 2010. A framework for refurbishment of health facilities. HaCIRIC International Conference 2010, Edinburgh, United Kingdom, 22nd September.

Rethink, Revitalization, Repeat…

- Hospitals faced with new challenges
- Continuous need to alter, upgrade, add or replace
- Physical building and materials used
  - Important for IPC and preventing spreading of micro-organisms
- Design dependant on what currently is prevalent in the facility
- Ability of the design to flexible important

Lateef, F. Hospital design for better infection control. Journal of Emergencies, Trauma, and Shock. 2009 Sep-Dec; 2(3): 175-179. [PMCID: PMC2776365] [PMID: 20009307]

Revitalization

- The main focus in building in healthcare was on building new healthcare facilities
- Increase focus on established buildings
- Limited resources – initiatives to conserve resources
- Make the old building more efficient and safe

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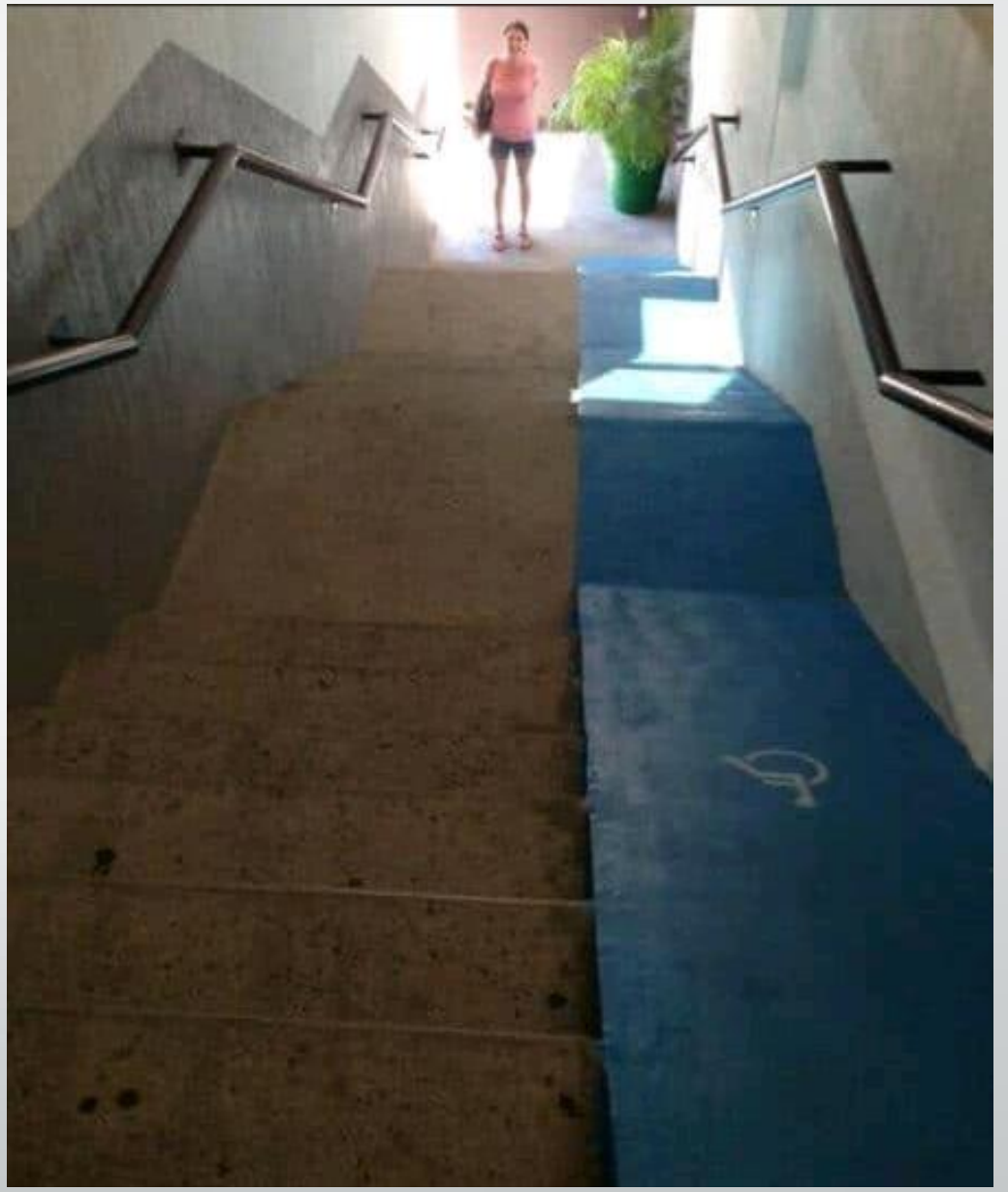

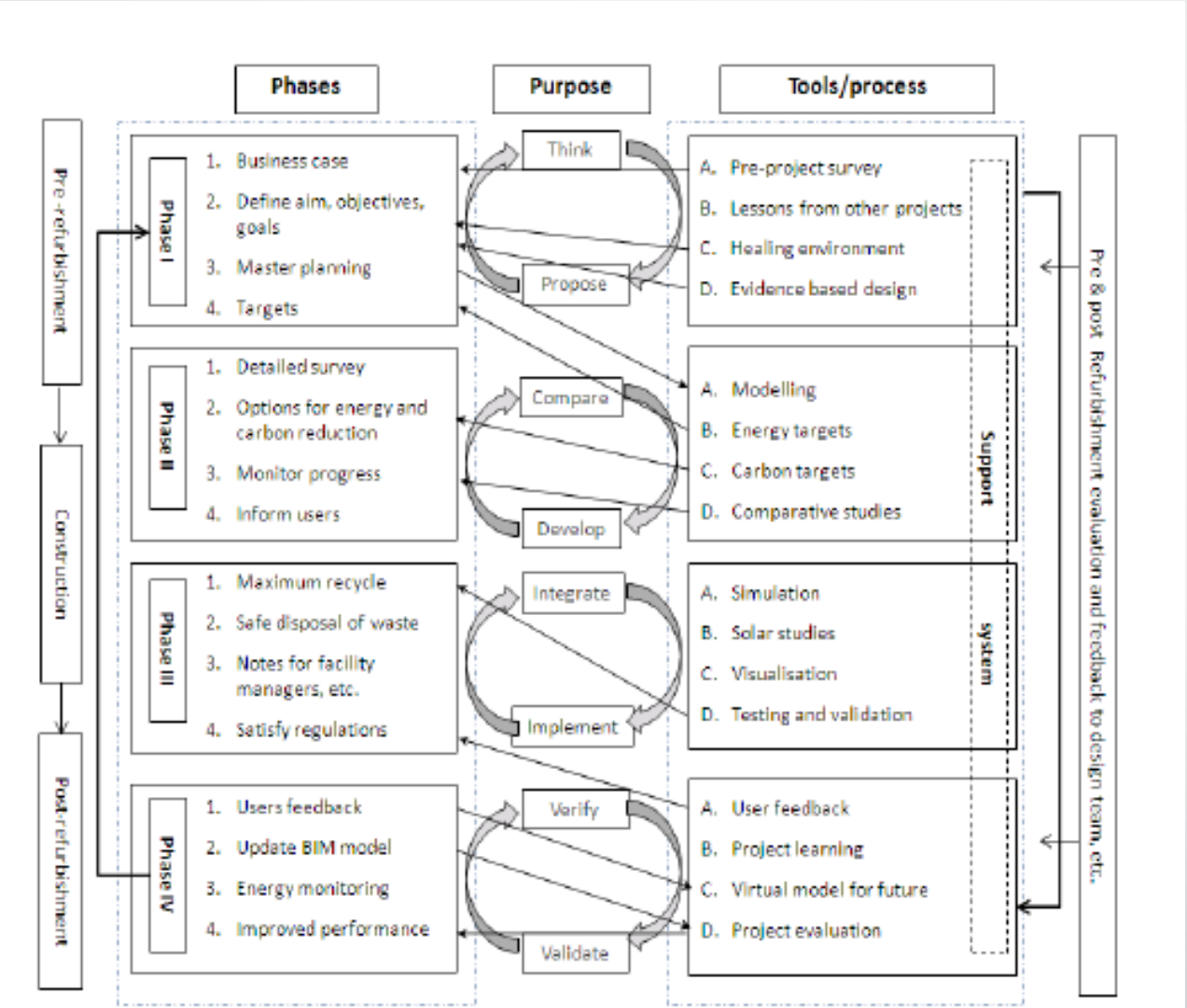

Figure 1: Conceptual framework for refurbishment

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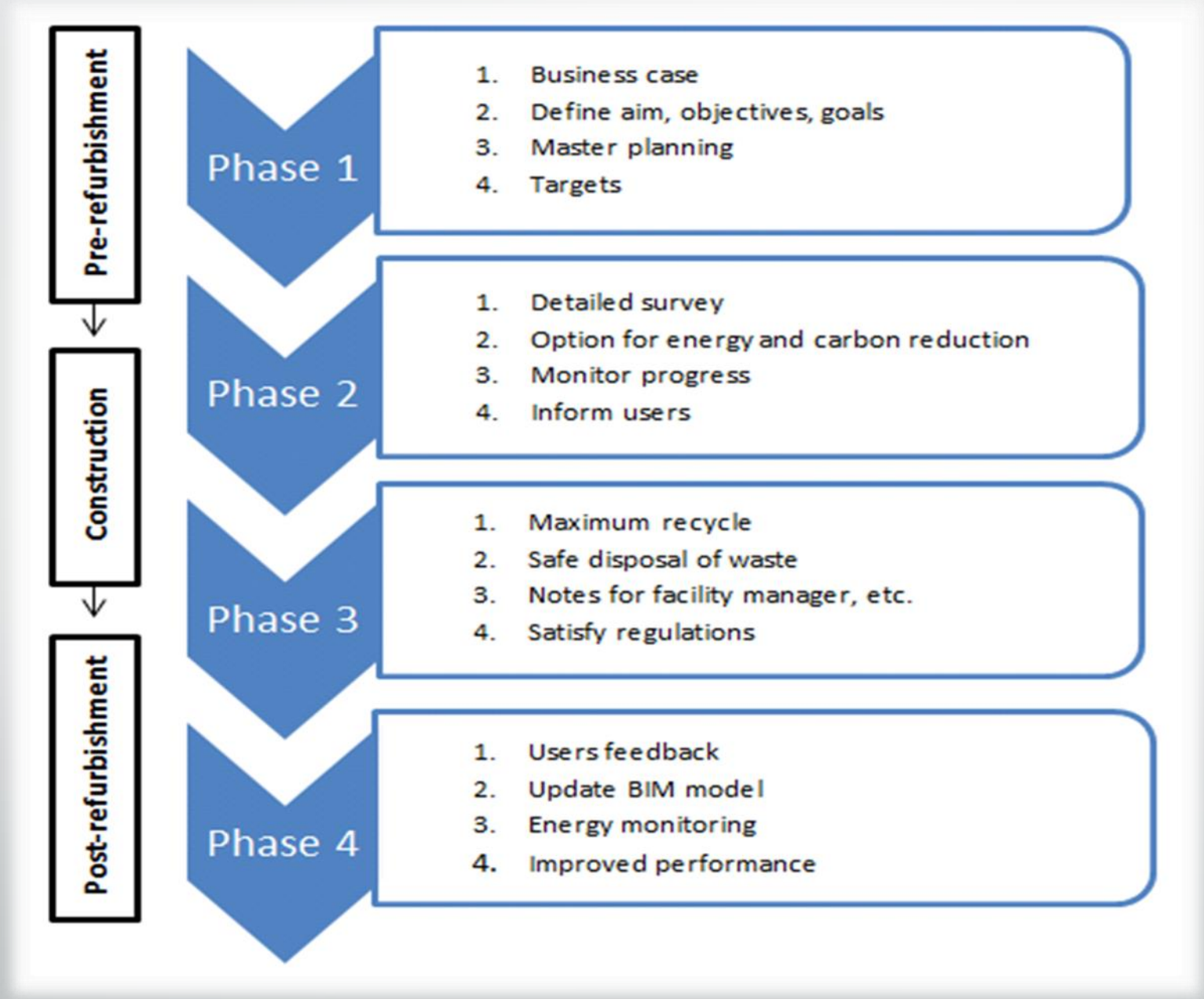
Pre-refurbishment
Construction
Post-refurbishment
Phase 1
1. Business case
2. Define aim, objectives, goals
3. Master planning
4. Targets
Phase 2
1. Detailed survey
2. Option for energy and carbon reduction
3. Monitor progress
4. Inform users
Phase 3
1. Maximum recycle
2. Safe disposal of waste
3. Notes for facility manager, etc.
4. Satisfy regulations
Phase 4
1. Users feedback
2. Update BIM model
3. Energy monitoring
4. Improved performance

Planning

- A proper assessment of the needs
  - What facilities are already there and the condition
  - What is needed
    - Current trends
    - Demographic
    - Epidemiology
- flexibility to be built in for the future
- Collaboration with other stakeholders and governing bodies
- Involving community and staff for input
- Ongoing maintenance of the facility

Design

- Cultural factors to be taken into consideration
- Needs to be a therapeutic environment
- Align with the needs identified during the planning
- Adequate infrastructure
  - Water and sanitation
  - IT and record keeping
  - Waste Management
  - Power supply

Guidelines for the Planning, Design and Building of Primary Health Care Facilities in Indigenous Communities. Queensland Health. Available from: www.health.qld.gov.au/cwamb/

Design

- Functional and practical
  - Movement of equipment of people
  - Storage
- Environmental conditions to be considered
  - Weather
  - Pest control
  - Water quality
  - Environmentally friendly design

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Design

- Materials selected
  - Durability
  - Easy to clean / maintain
- Cost effective
- Allow for flexibility
- Safe and reduce risks
- Within regulations

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Design

- Design and infrastructure play a vital role in IPC
  - Should already be part of the planning
  - Intent is to reduce the risk of spreading micro-organisms
  - Older facilities not necessarily equipped to face the challenges faced today
- Triage rooms (practical and staff safety)
- Isolation facilities (increased need)
- Ventilation

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Factors that influence planning and design

- Cost
- Construction material
  - Subject to frequent cleaning and chemicals
- Environmental protection
- Conservation of resources
  - Energy and water
- Durability and sustainability
- Frequency of use
- Safety

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Building

- Ensure compliance to Health and Safety standards
- Environmental impact
  - Cleanliness
  - Noise
  - Dust and fumes
- Security issues

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A team approach

- Collaboration between engineers, architect, health care workers, IPC
  - Educate
- Frequent site visits
- Be careful of basing changes just on literature – specific to that situation
- Unique – various challenges

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A final thought

- Best design ≠ compliance to IPC practices
  - Staff still have to comply and understand
- Study Lankford et al:
  - Hand hygiene compliance decreased in a new hospital
  - Peer and team NB – role model

References

Lankford, M.G., Zembower, T.R., Trick, W.E., Hacek, D.M., Noskin, G.A, Petersen, L.R. Influence of role models and hospital design on hand hygiene of health care workers. Emerging Infectious Diseases. 2003;9:217-23. [PMCID: PMC2901948] [PubMed: 12603993]

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