AHC #2 Meeting Minutes - Appendix C

MOE WORK GROUP REPORT & NOTES FROM AHC #2
(IBC Chapters 4, 10 & 11)

This appendix is based on the AHC's review of the noted Work Group Report at AHC Meeting #2. Notes from the meeting are indicated in red.

CURRENT CODE ISSUES: (based on issues identified at AHC #1)

MEANS OF EGRESS WORK GROUP

CODES:
IBC: Ch 10 and 11

ISSUES:
- EGRESS THROUGH ELEVATOR LOBBY (NEED TO COORDINATE WITH CTC EFFORTS)
- GENERAL EGRESS
  - WIDTH – 8' CORRIDOR VS 5' CLEAR;
  - COMMON PATH OF TRAVEL
  - TRAVEL DISTANCE
  - SLIDING DOORS
- SPECIAL LOCKING DEVICES
  - DELAYED EGRESS
  - LATCHES ON SMOKE BARRIER DOORS
  - STAFF CONTROL IN PSYCH WARDS
  - INFANT CONTROL
- OCCUPANT EVACUATION VIA ELEVATORS
- PATIENTS AS PART OF OCCUPANT LOAD CALCULATION/REFUGE AREAS
- SUITE SIZE AND SUPERVISION
  - MEANS OF EGRESS
- WAITING SPACES OPEN TO CORRIDOR
- ACCESSIBILITY - MAXIMUM 18" CLEAR MAX ON THE SIDE OF TOILET FOR CARE-GIVER ACCESS

CHAIR: FLANNERY

AHC MEMBERS: POLLITT, KOSARZYCKI, ALTIZER, NICHOLS

INTERESTED PARTIES: WOESTMAN, MANLEY, BEBE, KOFFEL, JAQUES, HELLMAN, PURSELL, CHRIS, COLLINS

The Means of Egress Work Group chose to subdivide the issues identified at the April 20 and 21, 2011 meeting into 5 areas of study:

1. Elevators –
   - EGRESS THROUGH ELEVATOR LOBBY
   - OCCUPANT EVACUATION VIA ELEVATORS

2. Corridors-
   - GENERAL EGRESS
     - WIDTH – 8' CORRIDOR VS 5' CLEAR;
     - COMMON PATH OF TRAVEL
     - TRAVEL DISTANCE
   - PATIENTS AS PART OF OCCUPANT LOAD CALCULATION/REFUGE AREAS
   - WAITING SPACES OPEN TO CORRIDOR

3. Security and locking arrangements –
   - SPECIAL LOCKING DEVICES
     - DELAYED EGRESS

- LATCHES ON SMOKE BARRIER DOORS
- STAFF CONTROL IN PSYCH WARDS
- INFANT CONTROL
- SLIDING DOORS

4. Suites
   - SUITE SIZE AND SUPERVISION
     - MEANS OF EGRESS SUITE

5. Accessibility -
   - ACCESSIBILITY - MAXIMUM 18" CLEAR ON THE SIDE OF TOILET FOR CARE-GIVER ACCESS

Following are the reports on each topic:

Issue #1:

1. Elevators –
   - EGRESS THROUGH ELEVATOR LOBBY
   - OCCUPANT EVACUATION VIA ELEVATORS

Discussion #1 (Elevators):

The following questions and answers were developed to assess needs:

- Are the elevators to be used for fire events?
  - Yes – as a secondary evacuation element.
  - Two options – when the elevator is in the smoke compartment where the fire is (fire escape); when the elevator is outside of the smoke compartment where the fire is (secondary/alternate means of evacuation).
  - Consider entourage factor – nurses and attendants moving with patient in beds/wheelchair.
  - Add to the fire-safety plan to allow for assisted evacuation by trained staff. An evacuation plan shall be developed using elevators before fire department recall. See NFPA7.2.13.1.
  - Do not want a trade off for required general egress stairways when elevators can be used.
  - Do you need a lobby or could you use the corridor to provide the smoke separation? Moving into a smoke compartment would provide a large protected area. Should it be sized for how many beds?
- Are the elevators to be used for non-fire events? Which ones?
  - Yes – hurricane, facility failure, chemical contamination, tornado, flood, security threat
- Is there a capacity for elevators used for occupant evacuation? [i.e. car size or # of cars based on occupant load, time goals, etc.]
  - At least one elevator sized for beds – in 2010 facility guidelines 2.1-8.7.2
  - Maybe more based on occupant load of patient floor
  - Performance base based on evacuation plans
- Are there additional negatives brought to a building when elevators are used in emergencies? [Unintended smoke movement, electrical integrity and reliability issues]
  - Smoke movement down corridor or up shaft from other floors
  - Elevator needs to have standby power – 60 seconds start-up
- Has there been any other work done on the issue?
  - CTC elevator lobby group
  - ASME committee for fire service and occupant evacuation elevators
  - Occupant evacuation models? Check with NIST or ASME elevator work groups

Conclusions #1 (Elevators):

The CTC elevator lobby group seems to be moving towards the elimination of elevator lobbies in sprinklered buildings with the exception of fire service access elevators and occupant evacuation elevators.

If someone wanted to be able to use the elevator to evacuate patients there would need to be two scenarios to look at:

- Emergency evacuations other than fire events
- For fire events - all other avenues of defend in place would have to be exhausted before a patient evacuation plan would be put into action. Elevator evacuation would not be possible from a smoke compartment where the fire event was located.

Neither of these scenarios fits with the fire service access elevators or occupant evacuation elevator systems currently in the IBC.

Since patients would be moved in beds and wheelchairs with staff, elevators would have to be sized accordingly. Standby power should be provided.

Corridors could possibly be utilized as staging areas for evacuation. Lobbies just would not be large enough. Would the doors to the lobbies being held open by people waiting? Would staff education to not hold open the doors unless assisting evacuees be sufficient?

AHC could check with NIST or ASME to see if there has been any occupant evacuation models with hospitals either during a general evacuation (i.e., flood, hurricane) or during a fire event. Is there any history on a hospital needing to do a building evacuation for a fire event?

No proposed text changes at this time.

Notes:

- CTC committee on elevator lobbies is still in process – this committee could suggest specific Group I-2 criteria
- Elevator doors are not smoke tight – therefore this is an issue when elevators open into hospital corridors where smoke partitions are required.
- Provide information on how the elevator lobby works with the defend-in-place concept, or not.
- Elevator lobbies may complicate evacuation from one smoke compartment to another
- Having elevator lobbies would also complicate evacuation using the elevators in non-fire events.
- What would be the purpose of the elevator lobby protection in a Group I-2? Is the vertical transmission of smoke not already addressed by a combination of the sprinkler, smoke barrier corridors and the smoke compartmentation on the floor?
- Suggest deletion of the elevator lobby requirement in Group I-2. John Williams has possible code change proposals to use starting points.
- Provide for CTC elevator study group a statement on how elevator lobbies are not part of the defend-in-place strategy. Need before the July 2011 CTC meeting.
- Also revise 711.9

713.14.1 Elevator lobby. …
Exceptions:
4. Enclosed elevator lobbies are not required where the building is protected by an *automatic sprinkler system* installed in accordance with Section 903.3.1.1 or 903.3.1.2. This exception shall not apply to the following:
   ~~4.1. Group I-2 occupancies;~~
   4.2. Group I-3 occupancies; and
   4.3. Elevators serving floor levels over 75 feet above the lowest level of fire department vehicle access in high-rise buildings.

711.9 Smoke barrier. Where *horizontal assemblies* are required to resist the movement of smoke by other sections of this code in accordance with the definition of *smoke barrier*, penetrations and joints in such *horizontal assemblies* shall be protected as required for *smoke barriers* in accordance with Sections 714.5 and 715.6. Regardless of the number of *stories* connected by elevator shaft enclosures, doors located in elevator shaft enclosures that penetrate the *horizontal assembly* shall be protected by enclosed elevator lobbies complying with Section 713.14.1. Openings through *horizontal assemblies* shall be protected by shaft enclosures complying with Section 713. *Horizontal assemblies* shall not be allowed to have unprotected vertical openings.

Issues #2:

2. Corridors-
- GENERAL EGRESS

- WIDTH – 8’ CORRIDOR VS 5’ CLEAR;
- COMMON PATH OF TRAVEL
- TRAVEL DISTANCE

- PATIENTS AS PART OF OCCUPANT LOAD CALCULATION/REFUGE AREAS
- WAITING SPACES OPEN TO CORRIDOR

Discussion #2 (Corridors):

General –

- Need to look at FGI document - room size seems to be covered, but maybe the corridor needs to be wider?
- Consider operational vs. minimum width requirements.
- Take look at transport teams and bed/equipment size, turning radius for evacuation width.
- What is different for health care that is different from a standard application? (i.e., Defend in place, limited evacuation, full evacuation)
- Need to look at MOE for other types of care suites without movement of beds (i.e., psychiatric, addiction)
- Should the storage of equipment take away from area considered for refuge areas during a defend in place scenario?
- Should this be in IFC maintenance of MOE?

Width –

- Should we consider equipment in the hallway as possible obstructions for the corridor width?
- Can some equipment, such as crash carts, be located in corridors within the minimum width?
- Can items be stored in the corridor if the operational width of 5 feet is maintained?
- Do percentage of corridor, or require passing space in minimal intervals?

Travel distance –

- Travel distance should be related to suite/smoke compartment size.

Areas open to corridors –

- How about alcoves for equipment open to the corridor?
- What other types of spaces should be permitted to be open to the corridor?
- Corridor width is based on operation of unit – not all hospital areas have bed movement.
- Should wait areas, alcoves for equipment, charging stations, chart stations, nurse stations be open to the corridor?
- Being open to the corridor and what is allowed in the corridor could be two different concerns.
- Other areas brought up included food/coffee shops, pharmacies, nutrition rooms, small lab areas.
- 2012 IBC Section 509 requires incidental areas to be separated and not considered accessory.
- Try a list for things that should not be allowed (patient rooms, hazardous areas, soiled/clean linen rooms > 50 or 100 sq.ft., treatment areas), rather than list of what was allowed.
- Should rehab areas be permitted to be open to corridors?
- The new trend is to have nurses in the patient rooms rather than at the nursing station – thus the need for more charting nitches and the fact that the nurse station is not always staffed.
- Are smoke detection and sprinklers enough as a trade-off for direct supervision/continually manned?
- NFPA allows for a broader exception for what can be open to the corridor.
- Typically, due to defend in place strategies, fires in fully sprinklered hospitals are occurring in individual rooms – not support areas.
- Charging stations for items like crash carts need to be in the corridor.
- Other support mechanized equipment should be in a separate room so that they don’t have groups on a corridor.
- Concerns for corridor width with these devices: fuel load/hazard from batteries, effective operational width during parking and/or during operation
- Crash carts, due to timing issues in an emergency, should be immediately available
- Planning should allow equipment that are transient in nature in the corridor, but not storage in the corridor

Smoke compartments –

- Should suite size/smoke compartment size be increased due to increased sizes of patient care areas?
- Is increasing the size of smoke compartments consistent with the philosophy of defend in place?
- Two compartments are required per floor at a minimum, even if one suite.

- You don't want to divide a function.
- Bigger patient rooms would affect occupant load – so maybe compartments should be larger
- Size of smoke compartment (2500 sq.ft.) came from 150 ft. travel distance.

Other –
- Should the door width be increased?

Conclusions #2 (Corridors):

Direction of discussions – No specific language at this time.

Corridor widths and use areas open to corridors – the following has been proposed.

- 8 foot corridor with an effective clear path of 5' that allows the passage of staff, patents and equipment under normal operating conditions
- Conditions. Low hazard equipment, carts, and devices that are transient or planned for and do not encroach upon an effective 5' clear path are allowed provided the organization has a management plan to address egress in emergency situations.
- Design niches/space in corridor for permanent/necessary equipment needs (i.e., crash cart). Allow only temporary/moveable items to obstruct corridor width.

Notes:
- Committee did focus in on right topics.
- Continue in direction of current discussion.
- New door width of 48" for patient rooms desirable
- 5 feet effective path is an operational issue that would be a result of a 8 feet corridor width
- Corridors are part of the hospital work space.
- Possibility of trade off for smoke detection when there is additional equipment in the hall – what is justification/incidence that would require smoke detection
- Look at committee reason for not approving 2006 code change proposal from John Williams on IFC for maintenance for Group I-2 corridor width
- For what use and in what conditions should the allowance be okay – define allowable obstructions; quantitative need; limit size or number of items; dependent on fire evacuation plan; medical equipment, patient lift and transport equipment, & equipment in consistent use.
- Substantiation for allowing some obstructions in the corridor?
- Address areas open to corridors

Issue #3

3. Security and locking arrangements –
   - SPECIAL LOCKING DEVICES
     - DELAYED EGRESS
     - LATCHES ON SMOKE BARRIER DOORS
     - STAFF CONTROL IN PSYCH WARDS
     - INFANT CONTROL
     - SLIDING DOORS

Discussion #3 (Security and locking arrangements):

Delayed egress –
- Should 1 second delay be increase to 3 seconds to avoid nuisance alarms
- Appropriate for Alzheimer wards, psychiatric, drug treatment, security concerns?
- Strobe warnings rather than audible more appropriate in certain areas? Different than color and flash used for fire alarm.

Special locks –
- Latches on smoke barrier doors
- Section 1008.1.9.9 Electromagnetically locked egress doors – often used in hospitals – allow in Group I-2. This is not

a security locking arrangement; it is a type of lock.

Discussion of security areas –

- Psychiatric wards – similar to restraint situations, not hospitals.
- If you are using special locking arrangement, could you put the limit on just getting out of the smoke compartment, not the building.
- The one delayed egress lock & special locking limit would not allow for a locked door on the unit and a second delayed egress lock & special locking on the stair tower.
- Clarify what can be used on exit access doors vs. exit doors
- "places or restraint" covers I-2 and I-3? Could restraint areas in Group I-2 use the locking arrangements in Group I-3 for same level of restraint.
- Some Alzheimer patients have aggression issue
- Need to include drug and alcohol rehab
- Allow for Group I-3 locking arrangements where needed rather than move use group
    - Conditions 4 (unit) and 5 (building) in 308.5.5 might address issues.
    - Condition 3 would address room for cool down in emergency rooms.
- New section where in hospitals need security to use Group I-3 locking arrangements.
- See Section 1008.1.9.10 Locking arrangements in correctional facilities - to allow for secure areas in Group I-2 building, but put in new section.
- Section 1008.1.9.6.1 Special locking arrangements in Group I-2 should adequately address infant control.

Conclusion #3 (Security and locking arrangements):

Need to look at provisions for :

- 1008.1.9.6, Special locking arrangement in Group I-2.
- 1008.1.9.7, Delayed egress locks
- 1008.1.9.8 Access-controlled egress locks
- 1008.1.9.9 Electromagnetically locked egress doors – allow in Group I-2
- 1008.1.9.10 Locking arrangement in correction facilities (as guide for what would work in secure areas)
- New section for secure areas in Group I-2 following guidelines in 1008.1.9.10

Notes:

- Operational issue results in wanting to lock a unit and have delayed egress locks on the door into the stair and sometimes a security lock at the bottom of the stiarway. Need to be able to go through more than one security lock in the path to the exit.
- Document controlled/locked egress paths. Fire and safety evacuation plans.
- Conditions of control/care similar to Group I-3 brought into the Group I-2. Set tiers of performance in a unit – not names/classification of patients. Suggestion – secured for clinical needs or secured for security needs.
- Balance security and life safety in locking arrangements.
- Consider areas temporarily locked for safe equipment operation – MRI, x-ray.
- If you egress through a courtyard, would secured gates from that courtyard need to be considered as a lock in the path for means of egress?
- Sometimes locked into a space but allow free egress vs. locked both ways (access controlled egress doors)

Issue #4

4. Care Suites

- SUITE SIZE AND SUPERVISION
    - MEANS OF EGRESS SUITE

Discussion #4 (Care Suites)

Size –

- Does the suite size/smoke compartment size need to increase with the move towards private rooms in future health care (36 to 42 beds).

Intervening rooms –

- Address rooms with intervening rooms – such as isolation rooms with ante room; or toilet room through a patient room is not an intervening room.
- Should the intervening room be deleted?
- When the exit goes through another suite, it should not be considered an intervening room or a restart of travel distance.Ante rooms and small unprotected corridors/vestibules in the suite should not be considered intervening rooms – i.e., only habitable rooms should be considered intervening rooms; the ante room is part of the patient room.
- Need to clarify unrated corridors/hallways from rated corridors. Maybe put a definition for hallway back in the code. Perhaps a better chance to evaluate as a corridor within a suite.
- Should sleeping room rules apply to other areas – critical care, intensive care, cardiac observation areas, pediatric units, maternity units, emergency rooms. Or should critical care allowances be extended to other areas where more continual supervision is needed?
- If we take out the requirement, would that be interpreted to mean no intervening room?
- Suggested leaving in two intervening rooms (i.e., accessory), increase to 100' and define to not include non-habitable spaces.
- Other situations to be considered – sleep study suite with common control room, MRI with control room in front, non-patient areas in suites, psychiatric suites.
- Add smoke detection throughout for both types of suites, not just in patient rooms – balances concerns for sprinklers maybe not working after earthquake or other natural disaster.

Travel distance/suite size –

- Travel distance should be related to suite/smoke compartment size.
- What is the justification for the size of care suites?
- The 5,000 sq.ft. was arbitrary – study efficiency, occupant load, staffing for suite sizes needed.
- If the suite size increases, will the travel distance still work? Is there a chance to look at travel distance for patients only – not all spaces?
- What is the justification? Is there statistical data on average area per patient? Will the increase in patient area justify the increase in suite size.
- NFPA 101 will be increasing the suite size 7,500/10,000 sq.ft with smoke detection/staff notification. Should the travel distance within the suite be increased if it is suggested to increase size in IBC? Does the number of doors slow down travel?

Other –

- Need to look at MOE for other types of care suites without movement of beds (i.e., psychiatric, addiction)
- Should the suite size translate to the ambulatory care facilities?

Conclusion #4 (Suites means of egress)

Revisions to Section 407. No proposal at this time.

Notes:

- Need modeling of patient rooms commonly found in suites – with the goal to determine is the suite size needs to be increased
- Types of suites to look at are ICU, CCU, rehab, dialysis
- Need modeling of total suite for number of rooms and care space
- Do special care suites such as phsych and rehab suites, as patient care suites, have different suite requirements/allowances?

Issue #5

5. Accessibility -

- ACCESSIBILITY - MAXIMUM 18" CLEAR ON THE SIDE OF TOILET FOR CARE-GIVER ACCESS

Discussion #5 (Accessibility)

In patient care areas where nurse assistance is needed to go to the bathroom (i.e., bariatric), the 18" clearance from the toilet to the wall does not allow enough room for a nurse to get next to the patient on each side to offer assistance.

IBC and the 2010 ADA standard ask for 10% of hospital patient rooms to be Accessible units. The current DOJ

regulations now ask for the Accessible units to be dispersed by type of unit. Wards/facilities that specialize in mobility treatment are required to be 100% Accessible units. There is an exception from the accessibility requirements for bathrooms in ICU and CCU patient rooms, but not other patient bathrooms associated with Accessible units.

The CTC has a committee looking at accessibility coordination items between IBC and 2010 ADA Standard for Accessible Design.

The new provisions for access to medical equipment from the Access Board might affect room/suite sizes.

Conclusion #5 (Accessibility)

The Access-Board is sponsoring a free webinar titled *Accessible Hospitals and Other Health Care Facilities on* July 7, 2011 2:30 - 4:00 (ET). Info is at http://www.access-board.gov/webinars.htm. Committee members can sign up to get additional information.

No proposals at this time.

Notes:

- Bring back information from the webinar
- Access to equipment may affect room size investigation for suites
- Look at possible code changes (i.e., door maneuvering clearance, bathroom configurations) specific to hospitals that could be passed forward to the CTC Accessibility study group

NEW CODE ISSUES:

- Evacuation for all hazards not just fire
- Doors – swing, size, corridor overlap, break out, smoke seal, maneuvering clearances
- Renovations for suites or smoke compartment vs. new construction

WG CROSS OVER ISSUES:

- The Fire Safety work group referred a proposal for delayed egress locks to the MOE work group. The MOE work group is looking at locking for security/wandering issues. Coordination/communication needs to be maintained in this area.

- If the General work group wants to increase the size of the Care Suites in 407, that will affect the MOE from that space. Coordination/communication needs to be maintained in this area.

- CMS Survey tool for existing buildings – Fire Code committee

Note:

- Need justification for increase of suite size
- CMS Survey tool may be in parking lot

FURTHER RESEARCH ISSUES:

Information on how elevators are used during different emergencies.

Study efficiency, occupant load and staffing needed for suite sizes.

From #1 Elevator comments above:

AHC could check with NIST or ASME to see if there has been any occupant evacuation models with hospitals either during a general evacuation (i.e., flood, hurricane, tornado) or during a fire event. Is there any history on a hospital needing to do a building evacuation for a fire event?

Notes: ASHE will provide general building evacuation studies

From #4 Suite Sizes above:

A study to statistically determine the area needed for "average patient care area" within a typical suite arrangement (i.e. area needed for an ICU care area – bed, equipment, staff movement, supplies, etc) - The 5,000 sq.ft. was an arbitrary number. Study should address

- If the suite size increases, will the travel distance still work? Is there a chance to look at travel distance for patients only – not all spaces?
- NFPA 101 will be increasing the suite size 7,500/10,000 sq.ft with smoke detection/staff notification. Should the travel distance within the suite be increased if it is suggested to increase size in IBC? Does the number of doors slow down travel?

OUT-OF-SCOPE ISSUES:
None at this time

ADDITONAL ISSUES TO BE BROUGHT TO AHC ATTENTION
Note at this time

WG PROGRESS ASSESSMENT:

The MOE work group has teleconferences every Friday, from approximately 10:00 to 11:30 EST. At the writing of this report we have had 8 teleconferences.

Most of the work group members have actively participated in most calls. There are always many interested parties on the calls.

John Williams' (Ad Hoc committee chair) participation has assisted in keeping the work group on track and helped provide background information on what the CTC care study group discussed/developed last cycle.

Some code change proposals were already submitted for committee review, however, discussions resulted in revisions to those proposals being needed before they went in front of the general Ad Hoc health care group. Substantial consensus on the direction of future work has been achieved. Development of specific code changes on several of the items are in progress.