Healthier & Safer Swimming: A Voluntary Use Model Aquatic Health Code (MAHC) for State and Local Health Departments

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Note: One Acronym Is Used Throughout!

MAHC = Model Aquatic Health Code
Why the MAHC?
Support the Health Benefits of Swimming

- One of top sports in the US – >300 million visits a year
- Low impact exercise; improves joint use with arthritis and cardiovascular health
- Improves mood
- Improves quality of life and reduces disability
- Maintains bone health for post-menopausal women

For more information, see http://www.cdc.gov/healthywater/swimming/health_benefits_water_exercise.html:
Increasing Pool-related Disease Outbreaks and New Germs

- Public health example
  - NY State, 2005
  - >2300 people ill with severe diarrhea; mostly children
  - Person with diarrhea contaminated splash pad water

- National context
  - Pool outbreaks increasing for 20 years
  - 111 pool-associated outbreaks for 2007-2008
  - *Cryptosporidium* now leading cause of pool outbreaks
    - Parasite is chlorine tolerant so it bypasses chlorination, the main protective barrier at pools

Hlavsa MC *et al*. 2011. MMWR 60(SS-12):1–39
Drowning

- **Public health example**
  - New Orleans: Lifeguard after-work party and guest drowns
  - MA, 2011: woman drowns in pool and body not found for 2.5 days

- **National context**
  - ~3,880 people drowned annually during 2005–2009
  - 2\textsuperscript{nd} leading cause of unintentional death from injury for ages 1-14
  - Deaths more common in males and African Americans, particularly children

CDC. Drowning — United States, 2005–2009. MMWR 2012;61(19);344-347. http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6119a4.htm?s_cid=mm6119a4_w
Indoor Pool Air Quality

- Public health example
  - Ohio, 2007: Indoor waterpark
  - >660 swimmers and staff experienced respiratory and eye symptoms
  - Required waterpark ventilation system re-design

- National context
  - Body waste such as sweat and urine bind with chlorine
  - Disinfection by-products volatile and move into air
  - Cause irritation of lungs and eyes

CDC. MMWR 2009 58:81-85.
Chemical Injuries

- Public health example
  - IN, 2012: Pool chemical leak at pool due to operator and mechanical error
  - ~200 people impacted, ~71 sent to hospital; several children hospitalized

- National context
  - 1998-2008: ~4,100 annual pool chemical injuries resulting in emergency department visit
  - 2007: National Poison Data System received calls for 9,573 exposures to pool chemicals; 40% in young children

Inadequate Pool Operation and Maintenance is Common

- Pool inspection data from 4 state and 11 local U.S. pool inspection programs (>120,000 pool inspections)

- 1 of 8 routine inspections resulted in immediate closure pending correction of violation

Recurring Economic Impact

- 10 primarily or partially waterborne diseases
  - 90,000 hospitalizations
  - $1.8 billion/yr in-patient cost
    - $820 million for Medicaid/Medicare
- “Swimmer’s Ear”
  - ~2.4 million annual out-patient cases
  - $500 million/yr
- Cost of outbreaks for industry and public health

Creating the MAHC
MAHC Genesis: A Public-Private Conversation

- CDC convened a 2005 workshop
  - ~100 national and local experts
  - Develop recommendations to reduce illness and injuries
  - Public pools and aquatics---not residential

- Workshop included
  - Federal/state/local public health officials
  - Aquatics industry
  - Academia
MAHC Genesis: A Public-Private Conversation

- Workshop main recommendation
  - Assist state/local health departments by creating model pool code as resource for creating/updating state/local codes
    - Don’t want to keep “reinventing the wheel” at state or local level
  - Be overarching: prevent disease, injuries, & drowning
  - Be science and best practices based
  - Stay up to date: develop plan to update regularly
Creating the MAHC: A Public-Private Partnership

- 2007
  - CDC organized Steering Committee
  - Federal/state/local public health and industry included
  - Doug Sackett, New York State Department of Health asked to be Director
  - Initial funding from
    - National Swimming Pool Foundation
    - Arch Chemical
    - CDC Foundation
    - CDC
Creating the MAHC: A Public-Private Partnership

- **2008**
  - Organize 12 Technical Committees
  - Cover topics like training, filtration, water quality, etc.
  - >200 participants from public health, industry, academia

- **2010-present**
  - Post each Technical Committee module as completed on CDC website
  - 60 day public comment
  - Revise and repost
Finalizing the MAHC: Process and Timeline

1. Recirculation Systems and Filtration
2. Monitoring and Testing
3. Contamination Burden
4. Hygiene Facilities
5. Fecal/Vomit/Other Contamination Response
6. Monitor Training
7. Lifeguarding and Bather Supervision
8. Disinfection and Water Quality
9. Regulatory Program Administration
10. Facility Maintenance and Operation
11. Risk Management/Safety
12. Ventilation and Air Quality

14 Modules

Develop modules; Post for 1st round of public comment

- Completed
- Fall 2013 (8 now)

Revise and repost all modules for information only (~3000 comments)

- Winter 2014

Merge all modules; Post final Draft 1.0 for 2nd (final) round of public comment

- Summer 2014

Revise and post First edition MAHC 1.0
Engaging Partners

- Engaged public health partners and kept them informed
  - Environmental public health experts (NEHA)
  - State Epidemiologists (CSTE)
  - State Health Officers (ASTHO)
  - City and County Health Officials (NACCHO)
  - Public Health Information Officials (NPHIC)

- Engaged new partners as process progressed
  - Memoranda of Understanding (MOU) building code groups
  - CDC Public Health Law Program
  - National Conference of State Legislatures (NCSL)
Short and Intermediate Outcomes: System Improvements

- Specific MAHC guidelines adopted by state and local public health officials
- Fewer pool closures
- Better inspection and tracking data
- Development of a research agenda to fill gaps
- Enhanced collaboration among stakeholders
Long-Term Public Health Outcomes

- Fewer outbreaks of disease
- Fewer drowning incidents
- Fewer injuries from pool chemicals and disinfection by-products
- Fewer emergency room visits due to swimming issues
Conclusions: Key MAHC Points to Keep in Mind

- **Goal**: Healthier and safer swimming
- **Process**: Open communication, understanding, co-development of MAHC by public health and aquatics
- **Setting**: public pools, waterparks, etc. (NOT residential)
- **Working Premise**: Evolution not revolution
Conclusions:
Key MAHC Points to Keep in Mind

- Not federal law
  - Local control, enforced only with adoption

- Numerous opportunities for input and public comment
  - ~200 people from across PH, aquatics, academia
  - Two 60-day public comment periods
  - Another opportunity if locality decides to adopt

- Major design and construction elements primarily pertain to new construction vs. retrofitting

- Process for systematic updating being created
MAHC Acknowledgments

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- MAHC Steering Committee Members
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- CDC, Injury: Julie Gilchrist
- CDC, PHLP: Montrece Ransom, Molly Berkery
More Information: Search on “CDC MAHC” or visit the Healthy Swimming MAHC Website: http://www.cdc.gov/mahc

Email: MAHC@cdc.gov

"The findings and conclusions in this presentation have not been formally disseminated by CDC and should not be construed to represent any agency determination or policy."

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