Welcome to the CDC’s Model Aquatic Health Code Network Webinar

Implementation of the Model Aquatic Health Code in Pueblo County, CO

7/26/23
2:00 PM ET

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This webinar is being recorded.
Webinar Agenda

- Welcome & Introductions
- NACCHO MAHC Resources
- Presentation: Pueblo Department of Public Health & Environment
- Question & Answer
- Wrap Up
Introductions

Deise Galan, DrPH, MPH
Lead Program Analyst
National Association of County and City Health Officials (NACCHO)

Rebecca Rainey
Program Analyst
National Association of County and City Health Officials (NACCHO)

Contact us by e-mailing MAHCnet@naccho.org
• Visit NACCHO’s MAHC Network webpage for MAHC resources:
  • Recordings & slides from past MAHC Network webinars
  • Resources for local health departments
  • Subscribe to the MAHC Network newsletter to up to date on new webinars, resources, and more!
Today’s Presenters

Autumn Whittaker, BS
Environmental Health Specialist
Pueblo Department of Public Health and Environment

Scott Cowan
Environmental Health Program Manager
Pueblo Department of Public Health and Environment
Making Waves In Pueblo County: A Journey Through A MAHC Adoption
Recreational Water Team | July 26, 2023

Autumn Whittaker, Scott Cowan
Objectives

• Background and historical challenges
• MAHC overview and adoption process
• Major facility changes and compliance assistance
• Cost-benefit analysis results
• Data pre- and post-adoption
• Successes and challenges
• Next steps and takeaways
Pueblo County Information

- "Home of Heroes"
- Location: Southeast Colorado
- Population size (2020):
  - City of Pueblo- 111,876
  - Total Pueblo County- 168,162
  - 2,398 square miles
- Ninth largest city in Colorado
PDPHE Recreational Water Program

- Total Facilities: 48
- Total Water Body Count: 75
  - Pools – 56
    - 30 year-round, 26 seasonal
  - Spas - 14
    - 13 year-round, 1 seasonal
  - Fountains – 5 seasonal
- Total Routine Inspections/Year - 118
Swimming Pool and Mineral Bath Regulations

- Last updated in 1994
- Closure rates
  - National: 1 in 8 pools, 1 in 7 spas
  - Local: 1 in 4 pools, 1 in 3 spas
- Did not align with Virginia Graeme Baker Pool and Spa Safety Act

Percent of inspections resulting in closure
Pre-MAHC: 2016-2021, National: 2018

- Pre-MAHC: Pool: 25%
- Pre-MAHC: Spa: 38%
- National: Pool: 13%
- National: Spa: 14%
Historical Challenges

- High closure rates
- Repeat violations
- Enforcement challenges
- Cryptosporidiosis outbreak - 2011
- Legionella/Pontiac Fever – 2013
- Multiple drowning accident- 2016
Enter the Model Aquatic Health Code

- Voluntary guidance published by CDC
- Revised in 3-year cycles
- Based on latest science and supported by 270-page scientific rationale (MAHC Annex)
- Aimed at reducing recreational water related injuries and disease outbreaks using current data
Advantages of the MAHC

• Brings program in line with national standards and VGB Act
• Improves data-based decision making for addressing risks
• Facilitated pool program improvements
• Renewed by regulatory, industry, and community experts
MAHC 3rd Edition reviewed by team
CO Regulator group meetings

Grant funding for public education + 2020 stakeholder meeting

Feb + Nov: Stakeholder meetings
Sep: EHC grant received
Oct: CO BOH rulemaking hearing
Dec: MAHC incorporated by reference in CO regs

Jan: Pueblo County MAHC adopted, new MAHC VL + inspection form
Feb: Stakeholder Newsletter + adoption letter
Apr: Inspections begin
Nov: Stakeholder meeting

Feb/Jun: 2 BOH presentations
Mar: Stakeholder Newsletter
May: Cost Benefit Analysis Survey
Jul-Sep: 3 Stakeholder meetings
Nov: BOH meeting/Public Forum

Jan: Stakeholder Newsletter
Feb: Stakeholder meeting
May: Cost Benefit Analysis Survey
Jun/Jul: NACCHO partnership
Aug: NEHA presentation
Major Facility Changes: Upon Adoption

• Chemical and pH adjustment feeders in all aquatic facilities

• New therapy, wading pools, or interactive water play venues need secondary disinfectant system

• Diaper changing station required with portable hand wash station

• Existing automated controllers shall be interlocked

• Lifeguards and Safety Equipment

• Certificate of Operation
Major Facility Changes: Within One Year

- All facilities must have automated controllers with interlocks for no/low flow deactivation
- Diaper changing station adjacent hand sink installed and operational
- Compliance agreements available
For those unable to cover MAHC upgrades…

**Compliance Agreement**
Additional time for upgrades
Must meet criteria until upgrades completed

**Variance**
Undue financial hardship
Must meet intent of regulation
What was not adopted and what was added

- Floatation Tanks (4.12.10 and 5.12.10)
- Discharged water (5.6.7.4.2)
- Combined plan criteria (6.3.3.2 EAP merged into 6.3.4.5)
- Enforcement and civil penalties (6.4-6.5)

IHHs added from old regulations:
- Positive total coliform water samples (routine for interactive play features)
- Max water temp (104°F)
# Cost-Benefit Analysis: MAHC-equipment required by 1/1/23

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Have it</th>
<th>Need it</th>
<th>Inconclusive</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sink near Changing Diaper Unit</td>
<td>36%</td>
<td>36%</td>
<td>2%</td>
<td>26%</td>
</tr>
<tr>
<td>Diaper Changing Unit</td>
<td>37%</td>
<td>37%</td>
<td></td>
<td>26%</td>
</tr>
<tr>
<td>2+ MAHC-required interlocks</td>
<td>39%</td>
<td>51%</td>
<td></td>
<td>10%</td>
</tr>
<tr>
<td>Automated Controller</td>
<td>49%</td>
<td>49%</td>
<td></td>
<td>2%</td>
</tr>
<tr>
<td>pH Feeder</td>
<td>46%</td>
<td>54%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Automatic Disinfectant Feeder</td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend:
- **Green**: Have it
- **Blue**: Need it
- **Yellow**: Inconclusive Response
- **Gray**: Not Applicable to Facility
Stakeholder Ability to Cover Cost Estimate for Upgrades

- Can Cover Cost
- Cannot Cover Cost

<table>
<thead>
<tr>
<th>Cost Range</th>
<th>Can Cover</th>
<th>Cannot Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>$1-$5K</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>$5K-$10K</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>$10K-$15K</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>$15K-$20K</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>$20K</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Blank</td>
<td>11</td>
<td>0</td>
</tr>
</tbody>
</table>

Pueblo Department of Public Health & Environment
Percentage of non-closure inspections vs. closure inspections (all inspection types)

- Closure Rate: Facilities with all MAHC equipment (4%)
- Closure Rate: Facilities without all MAHC equipment (13%)
- Closure Rate: Facilities with no survey response (5%)
- Non-closure Rate: All facility types (78%)
MAHC Adoption Successes

• Board of Health support
• Grant funding and accountability
• Stakeholder support and feedback
• 30% drop in pH violations since 2021
• Inspector morale after inspections
New regulations means new...everything!

- Violation library
- Inspection report form
  - Record 68 data points per inspection
- Plan review packet
- Operator resources
  - Logs, daily checklists, variance forms, compliance agreements, newsletters
### Aquatic Facility Inspection Form
Based on CDC’s 2023 Model Aquatic Health Code

#### Venue Type:
- Pool
- Hot tub/spa
- Wading pool
- Interactive water play venue
- Floating tank
- Other

#### Risk Type:
<table>
<thead>
<tr>
<th>Area</th>
<th>Item</th>
<th>Descriptions (A = critical violations)</th>
<th>Points</th>
<th>In</th>
<th>Out</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A</td>
<td>Enclosure: fencing, walls, gates and doors in good repair</td>
<td>10</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>A</td>
<td>Self-closing/self-latching gate or doors operational</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>A</td>
<td>GFCI electrical receptacles</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>A</td>
<td>Grab rails, ladders secured, shelf, dock in good repair</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>A</td>
<td>Flexibility line clearly present</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>A</td>
<td>Depth “x no diving” markers, stair stripes in good repair and visible</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>A</td>
<td>Oars, paddles, rescue boat, life preservers functional</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>A</td>
<td>Main drain located securely in place &amp; in good repair</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>A</td>
<td>Water is clear, main drain visible</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>A</td>
<td>Starting blocks removed, covered, or access blocked</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>A</td>
<td>Pool deck free from obstructions, equipment and marked</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>A</td>
<td>Mother phone or other communication device available and well-marked</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>A</td>
<td>First Aid Kit available</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>A</td>
<td>Appropriate safety equipment present in good repair</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>A</td>
<td>Supervision of the aquatic facility</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>A</td>
<td>Proper disinfection level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>A</td>
<td>Appropriate Personal Protective Equipment (PPE) available</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>A</td>
<td>Proper functioning UV lamp system</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>A</td>
<td>Proper sanitation for restrooms</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>A</td>
<td>Chemicals, stored, stored safely, secured</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>A</td>
<td>Appropriate Personal Protective Equipment (PPE) available</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>A</td>
<td>Pool deck free from obstructions, equipment and marked</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Recreational Water Inspection Report
- Facility Name: Test Permit Name
- Owner Name: Deb Mcbride
- Address: 101 Test Street Charlotte NC 28216

#### Inspection:
- Date: 07/12/2022
- Inspection Type: Other
- Venue Type: Year-Round Pool
- Filter Type: Cartridge
- Venue Volume (gallons): 500

#### Compliance Status:
- In compliance Outlook status: O
- No observed NA: not applicable
- COS: corrected on site
- R: repeat violation

#### Item # | Compliance | Violation Descriptions
--- | --- | ---
1 | | Enclosure: fencing, walls, gates and doors in good repair and function as intended
2 | | Protected overhead electrical wires
3 | | GFCI protected electrical receptacles within 20 feet of inside wall of venue
4 | | Proper depth “x no diving” markers, stair stripes in good repair and visible
5 | | Main drain located securely in place & in good repair
6 | | Water is clear, main drain visible
7 | | Starting blocks removed, covered, or access blocked
8 | | Pool deck free from obstructions, equipment and marked
9 | | Mother phone or other communication device available and well-marked
10 | | First Aid Kit available
11 | | Appropriate safety equipment present in good repair
12 | | Supervision of the aquatic facility
13 | | Proper disinfection level
14 | | Appropriate Personal Protective Equipment (PPE) available
15 | | Proper functioning UV lamp system
16 | | Proper sanitation for restrooms
17 | | Chemicals, stored, stored safely, secured
18 | | Recirculation pump approved, in good condition, and operating
19 | | Filter approved, in good repair, and operating
20 | | No swimming connections with potable or non-potable sources
21 | | No plumbing connections with potable or non-potable sources
22 | | Emergency lighting maintained
23 | | Approved chemicals and usage
24 | | Theoretical Peak Occupancy not exceeded
25 | | No broken glass or sharp objects present in venue or deck area
26 | | Water temperature does not exceed 104 degrees F
27 | | Bacteria within acceptable limits (sampled for interactive play features/fountains)
28 | | Approved water supply source
29 | | Substantial unauthorized alterations/equipment replacement
30 | | Other public health hazard as determined by department

#### Water Quality Readings
- Free Chlorine
- Total Chlorine
- Combined Chlorine
- Free Bromine
- pH
- Total Alkalinity
- Calcium Hardness
- Cyanuric Acid
- Water Temperature
- ORP Reading
- Flow Meter Reading
- Turbidity Rate
Program Revamp and Standardization

• Program manual
  • References SOPs and forms
  • IHHs, risk control measures, performance elements, inspection types/definitions, enforcement, training requirements, etc.

• Training Plan and Log (CFP template)

<table>
<thead>
<tr>
<th>INSPECTION TRAINING AREAS</th>
<th>CFP Template</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pre-Inspection</td>
<td></td>
</tr>
</tbody>
</table>

- Necessary inspection forms and administrative materials.
- Palimeter device, photometer chemicals, test tubes, tablet holder.
- Thermometer for measuring water temperature.
- Clean and treated (sodium thiosulfate) water sample bottles.
- Denitrified water, water sample grabber, measuring cup, and towel.
- Scissors, etc.

Comments:

Trainer has demonstrated acceptable performance for all competencies listed.

Date: Trainee's Initials: Trainer's Signature:
What Pre-MAHC strategies changed?

• Enforcement strategies- Inspection procedures for closures and follow ups
• Compliance Agreement process updated
• Variance process established
• No more routine total coliform sampling at all venues
• Streamlined administrative work with use of Certificate of Operation
• Tracking "Total EHS Time" spent on inspection work (field and administrative)
What does the data say now?

Percent of inspections resulting in closure
Pre-MAHC: 2016-2021, MAHC: 2022-2023, National: 2018

- Pre-MAHC: Pool 25%
- Pre-MAHC: Spa 38%
- MAHC '22: Pool 31%
- MAHC '22: Spa 57%
- MAHC to-date: Pool 25%
- MAHC to-date: Spa 39%
- National: Pool 13%
- National: Spa 14%
What does the data say now?

• 140 routine inspections (4/2022 to 7/2023)
• Violations marked “OUT” of compliance ≥ 20% of routine inspections:
  1. IHH: Proper depth & “no diving” markers; stair stripes in good repair and visible (32%)
  2. Signs: Bathing load/rules/chemicals/spa legible and in good repair (34%)
  3. Automated feeder operable (30%)
  4. Total Alkalinity between 60 and 180 ppm (28%)
  5. Combined chlorine < 0.4 ppm (27%)
  6. Grab rails, ladders secured; shell, deck in good repair (26%)
  7. Chemicals: labeled, stored safely, secured (24%)
Grant-funded incentives for stakeholders

- Bloodborne pathogen kits
- CPR masks and posters
- Buoys and 50’ line
- “No Diving” Markers
- No lifeguard on duty signs
- Dialing instructions
- Diaper changing units
- ColorQ test kits
- Taylor test kits and reagents
- CPO class vouchers
Stakeholder Response after Adoption
Best Practices and Lessons Learned

• Early education and involvement of stakeholders

• Create and foster partnerships (local level and beyond)
  • County attorney/legal team, BOH, LPHAs, state health department

• Ensure ample opportunities for collaboration and feedback among stakeholders

• Setting deadlines and expectations
Next Steps

- Develop Pool Safety and You Course (July 3, 2023, incident)
- HAZMAT training and Plan Review training
- Pulse check survey and analysis for stakeholders after 1 year of adoption
- Inspection data analysis after 1 year of adoption
- Program evaluation in 2023
Takeaways

• Don’t reinvent the wheel
• Stick with it…it is a process
• You are not alone
• Remember the end goal – SAFER SWIMMING
Acknowledgements

- NACCHO
- Pool Team Members
  - Robbie Boyer, Julian Lucero, Chad Wolgram, Vicki Carlton, Dayton Ryden, Cori Ocanas, Megan Collins
- Pueblo County Stakeholders
- PDPHE BOH
- NEHA
- CDC and CMAHC
- CDPHE and Colorado Swimming Pool Group
- Pool & Hot Tub Alliance - Dr. Neil R. Lowry Grant
Questions?

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Scott Cowan, Program Manager
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Thank you for attending today’s webinar!
You will receive a follow-up email with the webinar recording and slides.

Questions?
Use the Q&A box to submit your questions for the panelists!

For more information visit www.naccho.org/mahc