Thermometer Use: Making Progress Against HP 2020 Behavior Goals

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Objectives

• Review current knowledge and use of thermometers
• Understand the barriers to thermometer use
• Identify motivators to change behavior
• Review approaches that may increase thermometer use
Current Thermometer Use

Few use a thermometer to check doneness of meat, poultry or seafood

• Self reported use of thermometers increased from 33% in 1998 to 53% in 2010

• Burger Preparation Observational study (n=200)
  – 4% used thermometer to check when burgers were done
  – Only 13% knew recommended temp for burgers

• FDA topline survey (n=4,539) - 70% said they would never use a thermometer when cooking burgers

• Phang and Bruhn, 2010, Lando and Verill, 2006; Lando and Chen, 2012
Current Thermometer Use
Observational Study

Chicken Preparation (n=120)

• 48% owned a cooking thermometer
• 53% said they knew the recommended temperature for cooked chicken
• Only 29% responded with 165 F or higher
• 5% voluntarily used a thermometer to record chicken temperature

• Bruhn, 2014,
Thermometer Use: Chill

FDA 2010 Topline Survey (n=4568)

• 42% Have a thermometer build into refrig
• 21% Put a thermometer in their refrig

• Of those who said knew refrig temp (n=1444)
  • 14% reported 0-30F
  • 24% reported 32-35 F
  • 50% reported 36-41
  • 8% 42-50
  • 4% 51 or higher

http://www.fda.gov/Food/ScienceResearch/ResearchAreas/ConsumerResearch/ucm259074.htm
Thermometer Use: Chill Observational Study

- Few knew the recommended temperature for their refrigerator

Bruhn, 2014
Thermometer Use: Chill Burger Prep. Observational Study

Recorded Refrigerator Temperature

<table>
<thead>
<tr>
<th>Temperature (F)</th>
<th>Percentage of Households</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;32</td>
<td>3</td>
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<tr>
<td>33-34</td>
<td>9</td>
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<tr>
<td>35-36</td>
<td>18</td>
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<tr>
<td>49-50</td>
<td>2</td>
</tr>
<tr>
<td>&gt;50</td>
<td>3</td>
</tr>
</tbody>
</table>

14% of refrigs were 45F or warmer

Phang and Bruhn, 2011
Thermometer Use: Chill Chicken Prep. Observational Study

Actual Refrigerator Temperature

12% of refrigs were 45°F or warmer

Bruhn, 2014
Barriers to Thermometer Use: Chill

Unaware that they are not following recommendations

• Few have thermometers in refrig
• Believe the factory or service person’s setting is OK
• Saving electricity, especially in the summer
Barriers to Thermometer Use: Cook

Do not associate foodborne illness with home food preparation

- 95% Heard of people becoming ill from eating chicken
- 94% Heard of Salmonella
- 48% Believe their family has experienced foodborne illness

People believed the source* of their family’s illness was:
  - 86% Restaurant
  - 14% Friend’s home
  - 9% Home
  - 9% Picnic

* Multiple responses permitted

Bruhn, 2014
Observational Study: Burgers

Burger temperature ° F when consumers stopped cooking

Recommended Temp 155 F, Food Service, 160 F Consumers

Phang and Bruhn, 2011
Barriers to Thermometer Use: Cook

• Prefer their meat less thoroughly cooked
  – 23% preferred pink interiors
  – 2% preferred rare burgers

• Don’t ignore the value of advanced technologies
  – 24% said they would use a thermometer in the future
  – 49% would buy irradiated burgers
  – 48% would buy irradiated chicken

Phang, Bruhn, 2011, Bruhn, 2014
Observational Study: Chicken

- Recommended minimum 165°F
- 40% undercooked their chicken

Bruhn, 2014
Observational Study: Chicken

Undercooking occurred regardless of cooking method

Average degrees below 165

• Grilling/BBQ – 52% undercooked  18  17/33
• Fry/Stir fry – 41% undercooked  14  19/46
• Oven Baking – 27% undercooked  7  9/33
• Simmer in Pot – 28% undercooked  24  2/7

Bruhn, 2014
Barriers to Thermometer Use: Cook

• Using a thermometer is not necessary
  – Experienced, have been cooking for years
  – Can tell when it is done- use visual indicators like color, firmness, clear juices, shrinkage

• Perception is perpetuated by Restaurants
  – “How do you want your burger?”
Barriers to Thermometer Use: Cook

Perception that thermometers are not necessary is perpetuated by celebrity chefs

- Review of 60 shows featuring 4 celebrity chefs
- Survey findings regarding Chef’s burger preparation:
  - 89% would like to know how the chef knew the meat was done
  - 63% said they would consider using a thermometer if the chef used one
  - 52% thought a thermometer was not necessary if the chef didn’t use one
Barriers to Thermometer Use: Cook

• Perception that thermometers are not necessary is perpetuated by recipes
  – “simmer gently until chicken is cooked through, 20–25 minutes” Bon Appetit
  – “Add chicken; saute until cooked through, 10 to 12 minutes, turning once.” Martha Stewart
  – “cook chicken in hot oil over medium-high heat for 12 to 14 minutes or until tender and no longer pink, turning once.” Better Homes and Gardens
Barriers to Thermometer Use: Cook

• Perception that thermometers are not necessary is driven by social pressure
• Using a thermometer implies inexperience
  – “My husband knows when the meat is done. He can just tell.”
  – “Using a thermometer is cheesy”
  – “Who hasn’t cooked burgers before?”
Other Issues: Home Thermometers Are Not Always Accurate

Household thermometer deviation from Fisher Scientific °F

Bruhn, 2014
Recommendations

• Equate thermometer use with cooking expertise
  – The most experience cooks use a thermometer
  – “How hot is it? The best cooks know because they use a thermometer.”
Recommendations

• Equate thermometer use with cooking expertise

• Influence the media role models
  – Contact the Food Network and various celebrity chefs
  – Point out that their behavior influences the public
  – Partner with industry to exert economic pressure
Recommendations

• Equate thermometer use with cooking expertise

• Influence the media role models

• **Continue to stress that appearance is not a reliable indication of doneness**
  – Expand message to include chicken as well as burgers
  – Work with National Restaurant Assoc. to extend message to independent and chain restaurants
Recommendations

• Equate thermometer use with cooking expertise
• Influence the media role models
• Continue to stress that appearance is not reliable

• **Print recipes with end point temperature**
  – Food companies, cookbook authors, commodity groups, newspapers, all can do this!
  – When you see a recipe that doesn’t include end point temperature, contact the source and ask for it.
Recommendations

• Equate thermometer use with cooking expertise
• Influence the media role models
• Continue to stress that appearance is not reliable
• Print recipes with end point temperatures

• **Stress that meat/chicken is not dry when cooked to recommended temperature**
  – Focus on quality
  – Use humor in advertisements
  – Chicken and burgers are juicy and flavorful when not over cooked.
Recommendations

• Equate thermometer use with cooking expertise
• Influence the media role models
• Continue to stress that appearance is not reliable
• Print recipes with temperatures
• Stress that meat/chicken is not dry when cooked to recommended temperature

• **Include fun thermometer experiences into educational material**
  – Take the temperature of your refrig
  – Take the temperature of the cooked dishes/ leftovers
Recommendations

• Equate thermometer use with cooking expertise
• Influence the media role models
• Continue to stress that appearance is not reliable
• Print recipes with temperatures
• Stress that meat/chicken is not dry when cooked to recommended temperature
• Include fun thermometer experiences into educational material

• Other ideas from the audience?
Thank You

• The Partnership for Food Safety
• Graduate students: Ho Phang, Yaohua Feng, Rachelle Woods
• Undergraduate students: Thu Tran, Myat Aye
• Research support from STEC USDA grant, Outbreak Inc, and Foster Farms