Tim Sheehy

President

Metro Milwaukee Association of Commerce
THANK YOU

MMAC member

As MMAC transitions offices, we want to thank Spaces for our temporary home at their North Water Street location.

With over 3,000 global locations and 10 in Wisconsin, Spaces makes it easy to have a productive day at work.

Their all-inclusive, flexible offices and coworking make getting to work easy and affordable.

www.spacesworks.com/milwaukee/north-water-street
All Saver’s alternate funding

Health benefits coverage with UnitedHealthcare allows small businesses to purchase big-business employee benefits.

MMAC brokers can also offer UnitedHealthcare specialty lines of coverage including:

- Critical Illness
- Accident Protection
- Hospital Indemnity
- Dental, vision and life insurance

There’s no limit to what care can do

Contact your MMAC broker or visit uhc.com/MMAC
MKE HEALTH & ECONOMY BRIEFING
On Wisconsin’s Afternoon News
Tuesday @ 4:20pm

John R. Raymond, Sr., MD
Medical College of Wisconsin
President and CEO

Tim Sheehy
MMAC President
WISCONSIN SITUATION – NY TIMES 11.16.2020

• Wisconsin is an epicenter of COVID-19 in USA
• 4 of the top 20 metro areas in terms of worst burden of new case per 100,000 population are in Wisconsin. This is down from 11 two weeks ago.
• Top 20: Beaver Dam (7), Eau Claire (12), Wausau-Weston (13), and Fond du Lac (18)
• Nearby, Dubuque, IA is #16.
• More than a dozen Wisconsin metro areas have fallen out of the top 20.
• Sheboygan (9) is the only Wisconsin metro area on the top 20 areas for “Bad News Ahead” (where cases are increasing the fastest). This is down from 8 two weeks ago.
• Wisconsin has 4 of the metro areas with the highest burden of disease since the beginning of the pandemic: Beaver Dam (10), Green Bay (13), Oshkosh-Neenah (16), and Fond du Lac (18). Dubuque is #9.
• Great Lakes and Upper Midwest surges continue. Sun Belt also is surging.


Presented on 11/17/2020
Wisconsin data (last two weeks)

- Activity: Critically high (1,310.6 per 100,000, Critically high)
- Burden (per 100,000)
  - Critically high: 1,310.6

Case activity level by county (last two weeks)
Each square represents a county:
- Burden
- Trajectory
- Critically high: Growing, No significant change, Shrinking
- Very high: Growing, No significant change

Case Activity Level

- Critically high > 1,000 cases per 100,000 population
- Very high > 350 cases per 100,000 population
- High > 100 cases per 100,000 population

Learn more: covid19.mcw.edu

Presented on 11/17/2020
## COVID-19 Diagnostic Testing – 11.16.2020

### CUMULATIVE PEOPLE TESTED REPORTED AS OF YESTERDAY

<table>
<thead>
<tr>
<th></th>
<th>Wisconsin</th>
<th>Milwaukee</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>2,325,906</td>
<td>376,926</td>
</tr>
<tr>
<td><strong>Negative</strong></td>
<td>2,009,148</td>
<td>320,658</td>
</tr>
<tr>
<td><strong>Positive</strong></td>
<td>316,758</td>
<td>56,268</td>
</tr>
</tbody>
</table>

- # of people tested yesterday in WI = **12,298**
- Highest total of people tested was **42,451** on 10.08.2020
- Testing capacity: Up to **59,234**. 130 laboratories currently testing. 19 planning to test.

### DAILY POSITIVE CASES

<table>
<thead>
<tr>
<th></th>
<th>Wisconsin</th>
<th>Milwaukee</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>4,389</td>
<td>567</td>
</tr>
<tr>
<td><strong>% Case Positivity</strong></td>
<td>36.4%</td>
<td>32.3%</td>
</tr>
<tr>
<td>7-day average</td>
<td>trending stable</td>
<td>trending stable</td>
</tr>
</tbody>
</table>

- WI daily cases first exceeded 2,000 on 09.17.2020; 3,000 on 10.08.2020; 4,000 on 10.20.2020; 5,000 on 10.27.2020, 6,000 on 11.05.2020, and 7,000 on 11.07.2020.
- Previous high positive cases: WI: **7,777** on 11.13.2020 MKE: **1,097** on 11.13.2020
<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
<th>Change</th>
<th>(\text{2020-11.05} \text{ vs. 2020-11.11})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative Patients</td>
<td>14,499</td>
<td>Increasing</td>
<td>(4.6% of positive cases)</td>
</tr>
<tr>
<td>Inpatients</td>
<td>2,274</td>
<td>Increasing rapidly</td>
<td>(Previous high: 2,102 on 11.11.2020) (Low: 235 on 7.05.2020)</td>
</tr>
<tr>
<td>ICU Patients</td>
<td>456</td>
<td>Increasing</td>
<td>(Previous high: 441 on 11.11.2020) (Low: 65 on 7.05.2020)</td>
</tr>
<tr>
<td>ICU Capacity</td>
<td>168</td>
<td>Available ICU Beds</td>
<td>Worsening</td>
</tr>
<tr>
<td>Ventilator Capacity</td>
<td>1,751</td>
<td>Decreasing but adequate</td>
<td></td>
</tr>
<tr>
<td>PPE Trends</td>
<td></td>
<td>Worsening</td>
<td>Most critical needs: gowns and paper masks</td>
</tr>
</tbody>
</table>

Presented on 11/17/2020
WISCONSIN HOSPITAL COVID-19 TAKEAWAYS

• Hospitalizations are rising in all 7 Healthcare Emergency Readiness Coalition Regions
  - COVID-19 hospitalizations at or near all-time highs for all HERC regions:
    o Fox Valley (135), North Central (255), Northeast (207), Northwest (224), South Central (350), Southeast (984) and Western (119)

• COVID-19 ICU admissions are rising or peaking in six Healthcare Emergency Readiness Coalition Regions
  - COVID-19 ICU admissions are at or near all-time highs for Wisconsin and for five HERC regions:
    o North Central (50), Northeast (47), Northwest (23), South Central (90), Southeast (202) and Western (24)

• ICU censuses are high in six Healthcare Emergency Readiness Coalition Regions
  - Fox Valley (91%), North Central (94%), Northeast (94%), Northwest (89%), South Central (86%), and Southeast (88%)

• Southeastern HERC (includes Milwaukee)
  - COVID-19 hospitalizations are rising rapidly (now at all time high).
  - ICU admissions for COVID-19 are rising (now at all time high).
WISCONSIN HOSPITAL CENSUS TRENDS 11.16.2020

SE Wisconsin (29 hospitals)                                Wisconsin (134 hospitals)

Total COVID-19 Patients Hospitalized Per Day

Patient type
- Hospitalized
- ICU

Data last updated: 11/16/2020 3:30:55 PM. Implementation of federally mandated changes to data reporting caused a temporary gap in some data displays for late July.

Source: Wisconsin Hospital Association
Presented on 11/17/2020
## VARIOUS COVID-19 INDICATORS – 11.16.2020

### % OF CASES BY RECOVERY STATUS

<table>
<thead>
<tr>
<th>Status</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recovered</td>
<td>77.0%</td>
</tr>
<tr>
<td>Active</td>
<td>22.2%</td>
</tr>
<tr>
<td>Died</td>
<td>0.8%</td>
</tr>
</tbody>
</table>

### CUMULATIVE DEATHS

<table>
<thead>
<tr>
<th></th>
<th>Wisconsin</th>
<th>Milwaukee</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2,649</td>
<td>575</td>
</tr>
<tr>
<td>Male:</td>
<td>54.8%</td>
<td>54.2%</td>
</tr>
<tr>
<td>Female:</td>
<td>45.0%</td>
<td>45.7%</td>
</tr>
<tr>
<td>Black/AA*:</td>
<td>10.3%</td>
<td>31.8%</td>
</tr>
<tr>
<td>White:</td>
<td>81.7%</td>
<td>49.6%</td>
</tr>
<tr>
<td>Hispanic/Latinx*:</td>
<td>7.6%</td>
<td>14.6%</td>
</tr>
</tbody>
</table>

**Wisconsin death rate is rising**

**Worst days:** 66 (11.10), 64 (10.27) and 62 (11.06 and 11.11)

### POSITIVE CASES

<table>
<thead>
<tr>
<th></th>
<th>WI</th>
<th>MKE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doubling time (days):</td>
<td>40.8</td>
<td>68.1</td>
</tr>
<tr>
<td>R number:</td>
<td>1.07</td>
<td>1.07</td>
</tr>
</tbody>
</table>

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7-day growth rate:</td>
<td>2.2%</td>
<td>1.7%</td>
</tr>
</tbody>
</table>

**Wisconsin death rate is rising**

**Worst days:** 66 (11.10), 64 (10.27) and 62 (11.06 and 11.11)

*Totals exceed 100% due to overlap between Black/ African American and Hispanic/Latinx

Presented on 11/17/2020
Will we have a COVID-19 vaccine in the US by the end of 2020?

• Probably, but limited initially to front line healthcare providers, first responders, high risk populations.

• Recruitment was slowed by deceleration of pandemic in the US in August and early September but picked up briskly in October.

• No single drug company will be able to meet the short-term demand; many 100’s of millions of doses needed.
COVID-19 VACCINE PROGRESS

Will COVID-19 vaccines be safe?

• Probably, but development time frame is compressed from average of 12 years to 10-12 months.
• Nine vaccine manufacturers signed a vaccine pledge on 09.08.2020.
• We will not have long term safety data until late 2021.
• We saw vaccine makers showing caution during development – pausing studies to assess potential risks.
• Confidence in FDA’s “historic independence as the gold-standard international regulatory body” has been eroded.
• First to market might not be best vaccine.
COVID-19 VACCINE MAKER’S PLEDGE

COVID-19 Vaccine Maker Pledge

We, the undersigned biopharmaceutical companies, want to make clear our ongoing commitment to developing and testing potential vaccines for COVID-19 in accordance with high ethical standards and sound scientific principles.

Pascal Soriot
CEO, AstraZeneca

Ugur Sahin
CEO, BioNTech

Emma Walmsley
CEO, GSK

Alex Gorsky
Chairman & CEO, Johnson & Johnson

Kenneth C. Frazier
Chairman & CEO, Merck & Co., Inc.

Stéphane Bancel
CEO, Moderna

Stanley C. Erck
CEO, Novavax

Albert Bourla
Chairman & CEO, Pfizer

Paul Hudson
CEO, Sanofi

Presented on 11/17/2020
COVID-19 VACCINE PROGRESS IN US

• Two mRNA vaccine candidates will apply for Emergency Use Authorization by end of November (Pfizer-BioNTech, Moderna)

• Two adenovirus-based vaccines will complete phase 3 trials within weeks (Johnson & Johnson Janssen, AstraZeneca-Oxford).

• The Pfizer-BioNTech vaccine requires ultra-low temperatures, posing significant logistical challenges.

• The other three require more standard temperatures. Other possible market entrants also have transportation and storage advantages (Novavax fusion protein, Sanofi-GSK fusion protein, CureVac mRNA).
DATA SOURCES

• We use multiple external data sources for these presentations
  - Wisconsin Hospital Association: wha.org/COVID-19Update
  - Wisconsin Department of Health Services: https://www.dhs.wisconsin.gov/covid-19/index.htm
  - Milwaukee County: https://county.milwaukee.gov/EN/COVID-19
  - Reproductive number calculator: Rt.live
  - Wisconsin Electronic Disease Surveillance System (secure access required)
  - Milwaukee County Unified Emergency Operations Center (secure access required)

• Medical College of Wisconsin analytics
  - Institute for Health and Equity
  - Division of Epidemiology
  - Epidemiology Data Resource Center and Geographic Information System
APPENDICES: FOR REFERENCE

• Detailed slides for the four COVID-19 vaccines in Phase 3
  - Comparison slide
  - Pfizer-BioNTech
  - Moderna
  - Oxford-AstraZeneca
  - Johnson & Johnson Janssen
• Framework: Non-pharmacological interventions for individual COVID-19 risk reduction
• Framework: Framework for community COVID-19 risk reduction
• Social risk factors for COVID-19
• Individual risk factors for COVID-19
## PHASE 3 COVID-19 VACCINES IN US

<table>
<thead>
<tr>
<th>Company</th>
<th>Approach</th>
<th>Vaccine</th>
<th>Injection</th>
<th>BARDA R&amp;D Funding?</th>
<th>Phase 3 Trial</th>
<th>Storage and distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Oxford and AstraZeneca</td>
<td>Cold virus delivery of C-19 gene</td>
<td>AZD-1222</td>
<td>Two IM jabs of 5×10^{10} viral particles 28 days apart</td>
<td>$1.2 B</td>
<td>30,000</td>
<td>Operation Warp Speed (OWS) distribution.</td>
</tr>
<tr>
<td>Johnson &amp; Johnson Janssen</td>
<td>Cold virus delivery of C-19 gene</td>
<td>JNJ-78436735</td>
<td>Single IM jab of 5×10^{10} viral particles</td>
<td>$1.0 B</td>
<td>ENSEMBLE 60,000</td>
<td>OWS distribution.</td>
</tr>
<tr>
<td>BioNTech and Pfizer</td>
<td>mRNA</td>
<td>BNT162b2</td>
<td>Two IM jabs of 30 µg 21 days apart</td>
<td>No</td>
<td>44,000</td>
<td>Pfizer distribution. Specialized ultra-cold storage.</td>
</tr>
<tr>
<td>Moderna</td>
<td>mRNA</td>
<td>mRNA-1273</td>
<td>Two IM jabs of 100 µg 28 days apart</td>
<td>$955 M</td>
<td>COVE 30,000</td>
<td>OWS distribution. Standard storage.</td>
</tr>
</tbody>
</table>
PFIZER-BioNTech COVID-19 VACCINE

- **PFIZER**: BNT162b2
  - Uses modified mRNA to instruct human ribosomes to build COVID-19 spike protein

**Funding**: The companies have decided not to accept US government R&D funding

**Manufacturing and distribution (600+ million doses):**

- **100 million doses** to the US government ($1.95 billion purchase)
- **100 million doses** to Canadian government
- **120 million doses** to Japanese government
- **200-300 million doses** to European Union
- Working on deals with WHO, CEPI and GAVI the Vaccine Alliance
PFIZER-BioNTech COVID-19 VACCINE

- Design: Randomized, observer-blinded, placebo-controlled, stratified
  - Efficacy, safety, immunogenicity
- Vaccine: 2 shots of 30 µg BNT162b2 or placebo administered 21 days apart
- Primary Endpoint: efficacy against symptoms and positive COVID-19 test
  - Secondary endpoint: efficacy against severe COVID-19 (death, shock, ICU, respiratory failure)
  - Results by end of October
- Participants:
  - 21,999 recipients, age 16 and above
  - 40% of participants over 55 years old
  - Randomization to vaccine or placebo at 1:1 ratio
MODERNA COVID-19 VACCINE

- **moderna™**: mRNA-1273
  - Uses modified mRNA to instruct human ribosomes to build COVID-19 spike protein

- Funding: $2.45 BB (BARDA $955 million + US government $1.525 billion)

- Manufacturing and distribution (1 billion doses):
  - 100 million doses to the US government ($1.525 billion purchase)
  - In discussions with European Commission
  - In discussions with Japanese government
  - Multiple manufacturing deals
    - ROVI, Catalant and CordenPharma
MODERNA COVID-19 VACCINE

• Design: Randomized, stratified, observer-blinded, placebo-controlled
  - Efficacy, safety, immunogenicity

• Vaccine: 2 shots of 100 µg mRNA-1273 or placebo administered 28 days apart

• Primary Endpoint: efficacy to prevent COVID-19, 14 days after second dose; adverse events
  - Secondary endpoint: efficacy to prevent COVID-19 infection and severe COVID-19 infection
  - Results by November

• Participants:
  - 30,000 recipients, age 18 and above
  - 25-40% of participants either over 65 years old, or under 65 with co-morbid risk factors
  - Randomization to vaccine or placebo at 1:1 ratio
OXFORD-ASTRAZENECA COVID-19 VACCINE

• **AstraZeneca**

  - Weakened chimpanzee cold virus to deliver genetic material from COVID-19 spike protein

• Funding: $1.2 billion R&D funding from BARDA

• Manufacturing and distribution (1.8 billion doses)
  
  - 300 million dose option to purchase by US government

  - 100 million doses to Great Britain

  - 100 million doses supplied by GAVI and CEPI ($750 million)

  - 1 billion doses supplied by the Serum Institute of India

  - 400 million doses for the European Commission
• Design: Randomized, double-blinded, placebo-controlled
  - Efficacy, safety, immunogenicity

• Vaccine: 2 shots of AZD-1222 (one of two doses) or placebo administered 28 days apart

• Primary Endpoint: efficacy to prevent COVID-19, ≥ 15 days to one year after second dose
  - Secondary endpoints: efficacy and safety up to one year; presence of neutralizing antibodies at 28 days
  - Results by end of 2020

• Participants:
  - Up to 50,000 recipients in US, UK, Brazil, Japan and South Africa, age 18 and above (30,000 in US)
  - Diverse racial, ethnic, geographic groups; who are healthy or have stable co-morbidities
  - Randomization to two different doses of vaccine or placebo at 2:1 ratio
JOHNSON & JOHNSON JANSSEN COVID-19 VACCINE

- **Johnson & Johnson**
  - JNJ-78436725
  - Human adenovirus virus to deliver genetic material from COVID-19 spike protein

- **Funding:** $1.0 billion R&D funding from BARDA

- **Manufacturing and distribution (1.8 billion doses)**
  - 300 million dose option to purchase by US government
  - 1 billion doses in 2021
  - Manufacturing deals with Emergent Biosolutions, Catalent and PCI Pharma Services
• Design: Randomized, quadruple-blinded, placebo-controlled
  - Efficacy, safety

• Vaccine: 1 or 2 shots of JNJ-78436725 or placebo administered 28 days apart

• Primary Endpoint: efficacy to prevent moderate-severe COVID-19, ≥ 15 days to two years after dose
  - Secondary endpoints: efficacy and safety up to one year
  - Results by end of 2020

• Participants:
  - Up to 60,000 recipients in US and international
  - Diverse racial, ethnic, geographic groups; who are healthy or have stable co-morbidities; 18 years old or older
  - Randomization to one or two jabs of vaccine or placebo
Amount of COVID-19 inoculum is based on four contact parameters:

Number, proximity, intensity and duration of exposures

- AVOID CROWDS
- STAY AT HOME
- WORK FROM HOME
- MAINTAIN DISTANCE

- AVOID SINGING
- AVOID SHOUTING
- LIMIT INDOOR ACTIVITIES
- WEAR A FACE COVERING
- WASH HANDS
- LIMIT TIME OF EXPOSURE

Number
Proximity
Intensity
Duration
Community Risk is based on five parameters:

- Population density
- Population health
- Interactions
- Pre-existing conditions
- Disease burden

Population Density

Population Health

Interactions

Pre-Conditions

COVID-19 Burden
COMMUNITY RISK INDEX FOR COVID-19

Community Burden of COVID-19 Infections

Presented on 11/17/2020

Learn more: covid19.mcw.edu
INDIVIDUAL RISK FACTORS FOR COVID-19

- Male gender
- Age > 60
- Obesity
- Race (Black and African American, Native American, possibly Asian)
- Ethnicity (Hispanic, Latinx)
- High ACE levels
- Non-type O blood group
- Pre-existing conditions
  - Kidney disease; obesity; heart disease; hypertension; diabetes mellitus; cancer; lung disease, COPD and asthma; auto-immune disorder; immune dysfunction
- Low zinc, vitamin D levels?
SOCIAL RISK FACTORS FOR COVID-19

• Zip code, neighborhood

• Healthcare access and utilization

• Occupation

• Educational, income, and wealth gaps

• Housing
Lingqian Hu
Professor and Chair
University of Wisconsin-Milwaukee
Department of Urban Planning
Bob Monnat
Senior Partner
Mandel Group
Aaron Renn
Urban analyst and consultant

Author of the Heartland Intelligence research briefing
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Business Strategies
DURING THE PANDEMIC