Managing COVID in Populations

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Objectives

• Discuss the history of pandemics
• Describe the difference between containment and mitigation strategies
• Go step-by-step through essential functions during pandemic mitigation
• Review the current evidence-based strategies
• Discuss some hurdles affecting frontline healthcare workers
Affiliations/Credentials

• Physician specializing in both Emergency Medicine and EMS
• Medical Director of the Los Angeles County Fire Department
• Testing Coordinator for Los Angeles County – 3/18 – 4/17
• Emergency Physician at Providence Little Company of Mary Medical Center, Torrance
Pandemics

- None of this is new
- Epidemics and pandemics have occurred throughout recorded history
  - Point-to-point travel
Containment vs. Mitigation

• Containment – Attempt to reduce spread from infected to non-infected people to STOP an outbreak
  – Contact tracing, quarantines, etc.

• Mitigation – Attempt to SLOW the spread of an outbreak and lessen its impact.
  – Social distancing, lock-downs, etc.
Containment vs. Mitigation

- Containment strategies work when the disease is:
  - Readily identifiable
  - Limited numbers

- Mitigation assumes
  - The outbreak cannot be stopped
  - Containment efforts continue but it is accepted that true containment is not achievable
Essential Functions During Mitigation

- Surveillance and detection
- Clinical management
- Prevention of spread in the community
- Maintaining essential services
Surveillance and Detection

• Lab capacity
  – Personnel to perform
  – Organizing ordering
  – Equipment
  – Lab availability
  – Communicating results

• Good data
  – Quick
  – Accurate
  – Geography
  – Demographics
  – Actionable
What This Looks Like in Practice

• Symptom screening
  – Identify cases
  – Isolate
  – Access to testing
  – Timely results

• If positive:
  – Contact trace
  – Bring contacts in for testing or place on quarantine

• Lather, rinse, repeat
Clinical Management

• Patient management
  – Adequate supplies of:
    • PPE
    • Medical Equipment
    • Beds
    • Staff
  – Evidence-based medicine
  – Staff trained/up-to-date in fast-changing recommendations

• Health service continuity
  – Looking at system-wide data
  – Moving patients across the state
  – Discharge planning
What This Looks Like in Practice

Predictions of Demand in LA County | ICU Beds

Current ICU Bed Capacity for COVID-19 Patients*

*ICU Bed Capacity as reported on 7/27 without activation of alternative ICU locations or staffing

Additional Uncertainty if R increases

Uncertainty with no change in R

Hospital New Patient Projections

Effect of Physical Distancing

Where we are today

Additional Uncertainty if R increases

Uncertainty with no change in R

Current Bed Capacity for COVID-19 Patients

Where we are today

Additional Uncertainty if R increases

Uncertainty with no change in R
Prevention of Spread in the Community

• Medical countermeasures
  – Vaccination
  – Prophylaxis

• Non-medical countermeasures to contain/mitigate infections
Maintaining Essential Services

- Essential services continuity
- Recovery
Current Evidence*?

• Green Light (Benefit outweighs risk)
  – Remdesivir
  – Dexamethasone
  – High flow nasal cannulas and CPAP to avoid ventilators
  – Proning/repositioning
  – Convalescent plasma
  – NSAIDs/Tylenol
  – Anticoagulation (if evidence of clotting)

• Yellow Light (Benefit may or may not outweigh risk)
  – Hydroxychloroquine +/- azithromycin for treatment
  – Vitamin D
  – Vitamin C
  – Zinc

• Red Light (Risk outweighs benefit)
  – Hydroxychloroquine +/- azithromycin for prophylaxis
  – Supratherapeutic doses of vitamins/minerals for prophylaxis

*As of 8/1/20
Biggest Hurdles

• Supply Chains/Manufacturing
  – PPE, Testing, etc.
• Politics
• Disinformation
Resources Used