Health System Collaborative Participants

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About the Data

- Includes 6,329 COVID-19 confirmed admissions
  - 98% of statewide admissions (6,441 admissions per CDPHE)
  - 60,252 patient days
  - 17,431 ventilator days

- All patients had a positive COVID-19 PCR test

- Admitted between March 1, 2020 and July 31, 2020
About the Patients

- 67.2% (4,250) patients discharged to home
- 18.4% (1,162) patients discharged to another facility (Skilled Nursing Facility, Acute Rehab, Long Term Acute Care Hospital, another Acute Care Hospital or Hospice)
- Overall in-hospital mortality 13.5% (855)
About the Data: Caveats

- The data is not risk adjusted or case-mix adjusted
- The data was aggregated and de-identified at a health system level, and then aggregated centrally
- COVID-19 positive patient readmissions and transfers may be included in the datasets – a single patient may be counted more than once in the data
- 62 patients in the dataset remained hospitalized at the time the data was compiled, which could slightly skew mortality and length of stay in July
Distribution of Admissions Across Systems

- Banner: 5%
- Boulder: 1%
- Centura: 15%
- Denver Health: 10%
- HealthOne: 24%
- SCL Health: 15%
- UCHealth: 30%
Daily Reported Inpatient Census
Daily System Inpatient Census

COVID-19 Positive Inpatients on Ventilators

Patient Census

UCHealth  - Orange
Centura  - Red
HCA-HealthOne  - Gray
SCL Health  - Yellow
Denver Health  - Light Blue
Banner  - Green
Boulder  - Dark Blue
Disposition: All COVID-19 Patients

- **Home**: 67%
- **Another Facility**: 18%
- **Remain Inpatient**: 1%
- **Deceased**: 14%

* "Another Facility" includes SNF, LTAC, Rehab, Another Acute Hospital, or Hospice
COVID-19 Patient Disposition by Age Group

Disposition: Age <30
- Deceased: 1%
- Home: 93%
- Another Facility: 6%

Disposition: Age 30-49
- Deceased: 3%
- Home: 88%
- Another Facility: 9%

Disposition: Age 50-59
- Deceased: 8%
- Home: 76%
- Another Facility: 13%
- Remain Inpatient: 3%

Disposition: Age 60+
- Deceased: 22%
- Home: 50%
- Another Facility: 27%
- Remain Inpatient: 1%
Overall COVID-19 Mortality Rate

Overall COVID-19 Hospital Mortality Rate

March
- Age <30: 3.4%
- Age 30-49: 1.9%
- Age 50-59: 0.0%
- Age 60+: 0.0%
- ALL Hospitalizations: 6.7%

April
- Age <30: 15.1%
- Age 30-49: 3.4%
- Age 50-59: 3.4%
- Age 60+: 0.0%
- ALL Hospitalizations: 15.6%

May
- Age <30: 7.6%
- Age 30-49: 9.6%
- Age 50-59: 11.1%
- Age 60+: 6.3%
- ALL Hospitalizations: 12.5%

June
- Age <30: 19.4%
- Age 30-49: 3.1%
- Age 50-59: 8.3%
- Age 60+: 6.9%
- ALL Hospitalizations: 9.8%

July
- Age <30: 23.4%
- Age 30-49: 1.5%
- Age 50-59: 6.6%
- Age 60+: 1.6%
- ALL Hospitalizations: 15.8%
Mortality Rates
Patients Ventilated vs. No Time on Ventilator

COVID-19 Mortality Rate - Any Time on Ventilator

COVID-19 Mortality - No Time on Ventilator

[Charts showing mortality rates by age group and time on ventilator over months from March to July.]
Decreased Use of Mechanical Ventilation

% of COVID-19 Hospitalized Patients Requiring Ventilation

- Age <30
- Age 30-49
- Age 50-59
- Age 60+
- ALL Hospitalizations
Improved Average Length of Stay (ALOS)
Improved Average Length Of Stay (ALOS) Patients Ventilated vs. No Time on Ventilator
Average Time on Ventilator

COVID-19 Patients: Average Time on Vent

- March
- April
- May
- June
- July

Days

0 5 10 15 20 25

Age <30
Age 30-49
Age 50-59
Age 60+
ALL Hospitalizations
Discharge to Home: All Patients

% of All COVID-19 Patients Discharged Home

- March: Age <30: 89.4%, Age 30-49: 88.7%, Age 50-59: 84.0%, Age 60+: 85.0%, ALL Hospitalizations: 79.6%
- April: Age <30: 89.4%, Age 30-49: 88.7%, Age 50-59: 85.0%, Age 60+: 85.1%, ALL Hospitalizations: 79.6%
- May: Age <30: 88.8%, Age 30-49: 79.9%, Age 50-59: 72.1%, Age 60+: 72.1%, ALL Hospitalizations: 72.1%
- June: Age <30: 87.9%, Age 30-49: 74.0%, Age 50-59: 67.5%, Age 60+: 67.5%, ALL Hospitalizations: 67.5%
- July: Age <30: 87.9%, Age 30-49: 74.0%, Age 50-59: 72.1%, Age 60+: 72.1%, ALL Hospitalizations: 72.1%
Patients Discharged to Home: Ventilated vs. No Time on Ventilator

% Discharged Home - COVID-19 - Anytime on Vent

% Discharged Home - COVID-19 - No Time on Vent

March April May June July

Age <30 Age 30-49 Age 50-59 Age 60+ ALL Hospitalizations

Age <30 Age 30-49 Age 50-59 Age 60+ ALL Hospitalizations
Summary

- This dataset provides a comprehensive view of Wave 1 of COVID-19 in Colorado.
- Length of stay, mortality rates and ventilator use rates were observed to be higher in older age groups.
- Patients requiring mechanical ventilation were observed to have:
  - Higher mortality
  - Longer lengths of stay
  - Lower rates of discharge to home
Summary

► Ventilator utilization decreased between March and July

► Study was not designed to evaluate the cause of improved outcomes, but could be related to:
  ▶ Improved patient management and treatment algorithms
  ▶ Rapid sharing and dissemination of knowledge and best practices
  ▶ New therapies including antivirals and convalescent plasma
  ▶ Baseline patient characteristics and comorbidities

► Rates of ventilator use and length of stay data can help with future surge planning for potential future waves of COVID-19 in Colorado
Thank You to the Real Heroes!