Lumeris' COVID-19 Predictive Analytics

We understand that you, your staff, and your community are under stress during this time and we wish to do our part to help you care for your most vulnerable patients. We know that in some communities, PCPs and clinic staff are being under-utilized; we see opportunities for those teams to support proactive management to keep people as healthy as possible and at home. This proactive engagement can help reduce constraints on valuable hospital beds and medical equipment such as ventilators.

We created and published a simple predictive model that identifies patients at highest-risk of COVID-19 related hospitalizations. It can be deployed easily within the EHR and used by staff or be used as the basis for automated outreach campaigns or messaging via a patient portal (for example, MyChart). Given that hospitalization is expensive, our financial modeling shows that if that your outreach is 50% effective, that the breakeven point is around $1,382 – that is, your organization can generally spend up to $1,382 toward each person on your high-risk list and still come out ahead. Of course, avoided hospitalization also has humanistic benefits for the patients and can help alleviate some of the capacity burden on the healthcare system during the COVID-19 crisis.

Instructions for implementation within your EHR

This algorithm was designed to be easily input into your EHR and surfaced in a number of patient registries and worklists you use to prioritize outreach according to each person's composite risk stratification score. There is a 2-step process to implement this risk algorithm in your EHR, where you create a registry using the table below whereby each person gets points depending on his/her:

1) Age category, and
2) Conditions present in the past 12 months.

We found that people who have about 30 points or more correspond to the Top 1% highest risk group; people who have 5 or more points correspond to the Top 5% highest risk group. **We recommend starting outreach to everyone with 30 points or higher.**

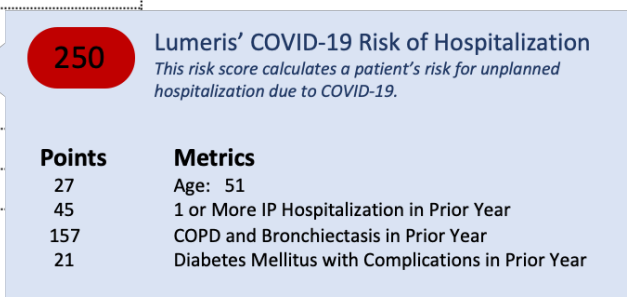
Table of the age categories and conditions, and the points to apply to each person, to create the composite risk stratification score. In case it helps, for each condition we also included the HCUP category.

Components	Points
Under 20 years old	-76
Age 20 to 64 years old	27
Age 65 and older	46
1 or more ED visits in prior year	8
1 or more IP hospitalization in prior year	45
Abnormal findings without diagnosis in prior year (HCUP CCSR Category: SYM017)	6
Aplastic anemia in prior year (HCUP CCSR Category: BLD003)	1
Chronic obstructive pulmonary disease and bronchiectasis in prior year (HCUP CCSR Category: RSP008)	157
Coronary atherosclerosis and other heart disease in prior year (HCUP CCSR Category: CIR011)	41
Diabetes mellitus with complication in prior year (HCUP CCSR Category: END003)	21

Diabetes mellitus without complication in prior year (HCUP CCSR Category: END002)	42
Essential hypertension in prior year (HCUP CCSR Category: CIR007)	51
Fluid and electrolyte disorders in prior year (HCUP CCSR Category: END011)	46
Heart failure in prior year (HCUP CCSR Category: CIR019)	39
Implant, device or graft related encounter in prior year (HCUP CCSR Category: FAC009)	32
Osteoarthritis in prior year (HCUP CCSR Category: MUS006)	17
Respiratory failure; insufficiency; arrest in prior year (HCUP CCSR Category: RSP012)	4
Secondary malignancies in prior year (HCUP CCSR Category: NEO070)	37

When complete it should look something like this for each person:

Patient Name	Date of Birth	COVID-19 Risk of Hospitalization
Mario Speedwagon	7/7/1948	267
Petey Cruiser	6/6/1979	3
Paul Molive	2/8/1969	250
Anna Sthesia	5/1/1973	93
Anna Mull	5/11/1967	68
Gail Forcewind	1/22/1997	10



As shown in the example above, a person who is 50 years old (27 points), with 3 prior hospitalizations (45), COPD (157), and diabetes (21) diagnoses in the past year, would have a score of 250 points. And since this person has >30 points, this person is in Top 1% of hospitalization and might benefit from proactive outreach.

For any questions, please contact us at info@lumeris.com.

Suggestions for outreach

There are several approaches one can take for outreach such as by phone, text, or the patient portal. We have outlined an approach here and we encourage others to share their suggestions on our community wiki here or by emailing info@lumeris.com.

Example: Phone outreach
If the outreach is by phone, a member of your clinical or social work staff can simply start the call conversationally, and after introducing her/himself ask,

1) How are you feeling today?
2) Is there anything we can do to help?
3) How many days of medication do you have left before you need a refill?
4) Are you worried about running out of food?

Through the course of the conversation, they'll want to:

- Determine the current status of existing chronic conditions and address any new problems, and the appropriate level of care associated with those symptoms.
- Learn if the patient has adequate medication quantities and supplies.
- Discuss any barriers that may prevent the patient from maintaining appropriate social/physical distancing, for example, getting groceries.
- Provide emotional or social support.
- Educate the patient on how and when to call the clinic for any problems.

If the outreach is by phone, we recommend scheduling time for a follow-up call. We recommend calls weekly for the next few weeks to see if there is a change in status.

Variations in the above approach can be used if outreach is via other modes such as text messages, letters, telehealth, or the EHR patient portal, or some combination.

Please feel free to contact us at info@lumeris.com if you have any questions or suggestions or if you want to be added to the list for updates.

Note: The COVID-19 predictive analytics program and the information described herein is not intended or implied to be a substitute for professional medical advice, diagnosis or treatment.