

Partaker Wealth Management
of RBC Dominion Securities



Wealth Management
Dominion Securities

E-WEDNESDAY

May 13, 2020



Expect the best. Prepare for the worst.
Capitalize on what comes.



Zig Ziglar



Money

“Money is like muck—not good unless it be spread.” ~ Francis Bacon

Trudeau pledges \$252M for COVID-19 aid to agriculture

Add chickens, mushrooms and potatoes to the ever-longer list of products being purchased by the federal government to combat the impact of the COVID-19 pandemic.

A program being heralded as the first of its kind will see the Liberals spend \$50 million to buy up surplus food as the closure of restaurants, hotels and other major purchasers of Canadian products results in an oversupply.

The money is part of a \$252 million aid package announced last week that's aimed at easing multiple pressure points on the beleaguered agriculture sector.

The purchased products, which Agriculture Minister Marie-Claude Bibeau suggested will include chicken, mushrooms and potatoes, will in turn be distributed to food banks and other community organizations who can use them.

The Canadian Federation of Agriculture last month had asked for \$2.6 billion in aid, and some of its members immediately said the funds announced Tuesday are simply not enough. "Without additional financial assistance across the industry, our domestic food supply and the entire food value chain is in jeopardy," said Keith Currie, the president of the Ontario Federation of Agriculture.

"This is critical to our food security and the health and well-being of all Canadians."

Others noted no funds were announced for the producers of fruits and vegetables, commodities whose growing seasons are now getting underway.

"Our members are at a point where decisions are being made about whether they can even afford to produce their crops this year," Pinder Dhaliwal, president of the B.C. Fruit Growers Association, said in a statement.

Prime Minister Justin Trudeau and Bibeau acknowledged the sector has asked for much more than Tuesday's package provided.

"This is an initial investment and if we need to add more, we will," Trudeau said.



RBC Wealth Management
Dominion Securities

Partaker Wealth Management of RBC Dominion Securities Inc
403.266.9647 Suite 300, 11012 Macleod Trail SE Calgary, AB T2J 6A5

Farmers and suppliers face a cascading series of problems this year due to the COVID-19 pandemic, many addressed in some measure by last week's announcement.

The temporary foreign workers who plant and harvest food can't all come to Canada but, as they do manage to arrive, they and domestic workers need equipment and supplies such as masks to keep them safe and able to do their jobs while respecting virus mitigation protocols.

Some \$77 million was allocated to that problem with those funds also being used to expand domestic processing capacity.

Bibeau said deciding which processing plants will get those funds will focus on the objective of the program, making sure Canada can handle more of its own product in the short term.

Those funds factor into another issue.

With workers in place, attention can turn to getting crops in the field or animals off to slaughter. But meat-processing plants in particular -- some of which have been grappling with COVID-19 outbreaks among staff -- are at capacity, and so there is nowhere to send the animals.

The government announced \$125 million for that area, with \$100 million of the funds to be split between hog and beef producers to account for the extra animals they must now feed.

If the products make it through processing, where to sell them? That's where the surplus buy comes in. Potato farmers have been among those sounding the alarm about growing stockpiles. There are an estimated 90.7 million kilograms (200 million pounds) of Canadian french fry potatoes stuck in storage, for example.

The dairy-processing industry will also be getting its own \$200-million fund to help buy up more milk and related products, a move which requires legislative change.

Bibeau pointed out that last week's announcement builds on previous commitments to increase access to funding for farms and to support temporary foreign workers, food banks and nutrition programs in the North.

The federal government is also topping up the amount of financial support it provides to farmers through existing income stability programs, a move that will also require provinces to kick in extra cash.



RBC Wealth Management
Dominion Securities

Macklem set to take Bank of Canada deeper into untested waters

Tiff Macklem returns to Ottawa next month to take the helm at the Bank of Canada, and while he'll be busy greeting old colleagues he hasn't seen for six years, his focus will quickly shift to leading the country out of its sharpest recession in nine decades.

Macklem, who was tapped Friday to replace Stephen Poloz on June 3, is taking over at an extraordinary time. The central bank is plowing ahead with its first-ever large scale asset purchase program to keep financial markets functioning, after cutting the benchmark interest rate to a record low 0.25 per cent, the so-called effective lower bound. That may be just the beginning.

"We are going to be moving from damage control in the financial system and easing strains there, to try to stimulate a recovery," Canadian Imperial Bank of Commerce economist Royce Mendes said by phone. "And that's going to need a more aggressive policy response. I think he's going to have to do things like standard QE."

This isn't Macklem's first rodeo. He has more than two decades of experience at the central bank, and after a stint at the finance department during the 2008-09 financial crisis, he returned in 2010 to become senior deputy governor under Mark Carney. That was about a year after Carney, to reassure markets, issued forward guidance that interest rates would remain low until the economy recovered.

It's an idea that should be revisited, according Derek Holt, an economist at Bank of Nova Scotia. "If I were Macklem, then on Day 1 I would reintroduce the conditional commitment that was used in 2009," Holt said by email. Such a move would address the need "to offer something in a highly uncertain world."

While the current public health crisis is very different from the financial crisis, Macklem will get the opportunity to use tools that were discussed merely as theoretical constructs during his time at the bank.

"He is the full package. He's got the academic credentials, the experience in the private sector, central bank and business and is well-respected in a policy role," Royal Bank of Canada Chief Economist Craig Wright by phone. "Nobody outside of Canada would be surprised to hear his name as governor."

Senior Deputy Governor Carolyn Wilkins had been the frontrunner to succeed Poloz, but Macklem's appointment wasn't a complete surprise, according to Toronto-Dominion Bank Chief Economist



RBC Wealth Management
Dominion Securities

Beata Caranci. For the past two decades, the government has chosen a governor from outside the bank.

Macklem is both an insider and outsider, having worked outside of the bank while also having a legacy working under Carney. "It looks like they want that balance between the two," Caranci said, adding the 58-year-old is familiar with adversity. "We are in an equally, if not more, challenging period now with the degree of uncertainty. This is not unfamiliar territory for him."

In the near-term, Macklem's accession to governor probably won't mark a major divergence from current monetary policy. He declined to give specifics until he's actually in the governor's seat, but said he agrees with Poloz that rates are at a floor.

"When you look at the current situation, yes I'm quite comfortable with the effective lower bound where it is," the incoming governor said Friday at a press conference, suggesting it wouldn't make sense to add to the uncertainty with negative interest rates.

He may also be less inclined to factor the currency into policy decisions than Poloz was, according to Bank of Montreal Chief Economist Doug Porter, a former classmate of the incoming governor. "It's probably fair to say that Macklem will be less focused on the Canadian dollar than Poloz, although that does not imply he will be less dovish," Porter said in a note.

When the time does come for Macklem to enact a recovery plan, the bank still has a few options left in the toolkit. He could, for instance, implement forward guidance, standard quantitative easing or more targeted credit easing to make sure the public benefits from the effects of lower interest rates.

For now though, the Montreal native endorsed the idea that unusual circumstances call for exceptional policy measures. "You need to think beyond the normal responses," he said, echoing Poloz.

"You need to restore confidence and I think when you look at what the Bank of Canada has done so far, when you look at the actions that the government of Canada has taken to provide a bridge to Canadians to the other side of this, these are bold unconventional policy responses that really have embraced this idea," Macklem said.

WestJet will make it through COVID-19, but may not recover to previous size, warns CEO

The effect of COVID-19 on WestJet has been so devastating that the company may never return to its pre-pandemic size, CEO Ed Sims said last week.



RBC Wealth Management
Dominion Securities

Partaker Wealth Management of RBC Dominion Securities Inc
403.266.9647 Suite 300, 11012 Macleod Trail SE Calgary, AB T2J 6A5

In an exclusive interview with Postmedia, the head of the Calgary-based airline said the unprecedented collapse in demand for air travel as a result of the virus means WestJet must decide what size of fleet will be commercially viable for the next several years.

“We might not be our previous size for a long time, if ever,” Sims said. “We just might not get back there.”

Still, Sims said he has “unequivocal” confidence that WestJet — which prior to the pandemic had 14,000 employees and flew to more than 100 destinations in 24 countries — will survive COVID-19 and be a part of Alberta’s eventual economic recovery. He said the airline has a capable team, the solid backing of its owners (Toronto-based Onex Corp.), and the assurances of the federal government.

“In one conversation I had with Prime Minister Justin Trudeau, he said to me that the federal government is committed to WestJet flying Canadians for many, many years to come, and I take a lot of comfort and solace from that statement,” Sims said.

Before the pandemic, WestJet had been a bright spot in the Alberta economy. While many of the province’s other major employers contracted as the price of oil declined, WestJet has spent much of the past five years in aggressive expansion mode, building out its network in preparation for the launch of its Boeing Dreamliner program last year. Before COVID-19 hit, WestJet was using those state-of-the-art planes to fly its first transatlantic routes to London-Gatwick, Paris and Dublin — and had planned to launch a direct flight from Calgary to Rome this month.

But COVID-19 has severely clipped WestJet’s wings, forcing it to suspend all commercial transborder and international flights. Of the company’s 181 aircraft, 135 have been parked. More than half of its employees have been temporarily furloughed. And Sims said WestJet is considering whether it will have to defer or cancel future scheduled deliveries of the Dreamliner.

“It’s utterly disheartening and dispiriting,” he said. “It’s very hard to see something that you’ve built so carefully and thoughtfully over the last four or five years dismantled.”

As a private company, WestJet has not made public the extent of the financial losses it has taken. (Competitor Air Canada, which is publicly traded, said its own losses topped \$1 billion last quarter.)

However, WestJet has been operating in crisis mode since March 1, when bookings began to “fall through the floor” with the increasingly dire news reports out of China and Italy. Sims said in the worst days of early March, when cancellations were outstripping new bookings and before the airline made the decision to temporarily furlough half its staff, WestJet was burning through cash at a rate of about \$25 million per day.



RBC Wealth Management
Dominion Securities

Partaker Wealth Management of RBC Dominion Securities Inc
403.266.9647 Suite 300, 11012 Macleod Trail SE Calgary, AB T2J 6A5

WestJet has been able to access the Canada Emergency Wage Subsidy program, which provides a 75 per cent wage top-up for eligible employers, to keep many of its furloughed employees on the payroll — even though there is no work for them to do. But that program expires in early June, making its renewal Sims' first priority in what he says are “daily” conversations he is having with the federal government.

WestJet is also seeking federally backed credit support to help the airline maintain liquidity until the worst of the crisis is over.

“We are not looking for taxpayer cash,” Sims said. “We are looking for a facility . . . that would essentially give us the peace of mind to know that if this goes on for another three months, six months, 12 months that we can continue to operate.”

Sims said he doesn't expect a recovery in air travel demand until the fourth quarter of 2020, in time for the critical holiday season. But even then, he doesn't anticipate business to return to normal. While domestic air travel will likely recover first, followed by transborder travel, international travel to Europe and beyond will take longer, he said.

The uncertainty around when exactly Canadians will feel comfortable travelling to Europe is why the company's Dreamliner expansion plans are now up in the air, Sims said. (WestJet originally planned to take possession of a total of 10 Dreamliners by 2021, with an option to buy 10 more.)

“We have to be very conscious that these are very, very expensive pieces of equipment and no one is served by having expensive equipment sitting on runway aprons instead of operating,” Sims said. “It's a consideration, not just for the 787 but for broader aspects of our fleet.”

Still, Sims said at the very least, he wants to resume flying to WestJet's original four European destinations — London, Paris, Dublin and Rome — as soon as it is safe to do so.

“As soon as I see positive signs of demand, and signs of encouragement in Europe that they are now actively containing the spread of the virus, then I want to get back to a position of operating those 787s out of Calgary,” he said. “I firmly believe that we will be a critical part of Alberta's recovery.”



RBC Wealth Management
Dominion Securities

Partaker Wealth Management of RBC Dominion Securities Inc
403.266.9647 Suite 300, 11012 Macleod Trail SE Calgary, AB T2J 6A5

Technology & Perspective

“It’s not a faith in technology. It’s faith in people.” ~ Steve Jobs

Never Waste a Crisis: How Canada Can Build the Digital Government of the Future - By RBC Economics

The future of Canada's governments may have arrived ahead of schedule.

Practically overnight, thousands of bureaucrats had to pivot to working from home and processing millions of relief applications. They’ve been pushing out billions of dollars in support for Canadians impacted by the COVID-19 crisis – almost entirely through digital channels, a first for the government. Hillary Hartley, Ontario’s Chief Digital and Data Officer, and her distributed team were uniquely suited to this new environment. Their model made it easy for them to immediately start working from home when it became necessary without losing ground. After Alberta launched Canada’s first COVID-19 online self-assessment tool, Hartley’s team got the code and launched a version for Ontario within three days.

While the current focus for governments is on mission-critical crisis response, conversations are happening behind the scenes about how to seize this crisis to digitally revolutionize and better serve Canadians. Hartley and Alex Benay, the former CIO of Canada and partner at KPMG responsible for digital and government solutions, joined the RBC Disruptors podcast to discuss how the pandemic has made getting government up to the speed of digital more possible than ever.

Benay says it’s interesting to see so many efforts pushing past all the “excuses” that used to exist for why governments couldn’t go digital-first. New programs such as the Canadian Emergency Response Benefit are going online faster, for instance, partly because the underlying rules are simpler.

“EI has tens of thousands of rules, CERB has a handful,” he said, “You’re seeing governments – both from a programmatic perspective and a technological perspective – realize that digital first is the way to go now.”

That is, if we can overcome outdated operating models.

Benay said the government’s conception of the Internet hasn’t evolved from processes created roughly 20 years ago. Bureaucrats are focused on the people who need to implement services, rather than data that could be beneficial. And information collected is protected behind firewalls and silo-ed across departments.



RBC Wealth Management
Dominion Securities

The latter is partly the product of privacy restrictions. In Ontario, for instance, data collected for a government program is allowed to be used only for that program. Even within the same ministry, different teams have to write up mutual agreements to be able to share data. Hartley said Ontario might have gone “a little bit too far in thinking about privacy” and not enough on interoperability, or how information could be exchanged.

“Attitudes are shifting,” she said. “It’s a moment where we really need to ask ourselves and ask the public how we should proceed.”

It comes down to two core pillars.

One is ensuring policies and regulations adapt quickly to enable proper sharing of information.

The other is having the right digital infrastructure to support a new model of service delivery. At the heart of the two is balancing a digital first mindset with appropriate privacy protections.

Perhaps there’s no better example of a digital-first government than Estonia. Both Hartley and Benay point to two specific innovations that paint a picture of what a future Canadian digital infrastructure could strive for.

The first is Estonia’s X-Road or as Benay describes it, “their railroad of the Industrial Age, but for the digital age.” It’s a decentralized server that allows thousands of businesses, governments and people to connect and exchange information. The other is a secure digital identity issued to every Estonian, which might arguably provide better privacy protections than what’s available in Canada today.

So how might Canada build the digital government of the future? A few takeaways:

- **Distributed teams.** They’re key to finding innovative solutions. To solve complex challenges, governments will need to work with people and networks in every corner of the world.
- **Digital isn’t a tool, it’s a culture.** Digital transformations require a major shift of mindset toward speed and user centrality. And it starts at the top with leaders who champion a digital-first model and encourage diversity of perspectives on their teams.
- **Data is key.** Governments need to focus on a new approach to data and privacy if they want to keep pace with the challenges and opportunities all around us. That doesn’t mean citizens will surrender control of our data, but there needs to be more flexibility, coupled with transparency, to solve a crisis like COVID.
- **Obsess with users.** Increasingly governments are learning to act less like monopolies and think more like start-ups that aren’t afraid to test and learn from their clients – it’s the most fundamental principle of a digital organization.



RBC Wealth Management
Dominion Securities

- **Bold does not mean big.** Use the success of the CERB roll-out, with its simpler business rules, as an example. Governments no longer need size to deliver results at scale. They can fund smaller things; focus on the half-dozen things that can make an impact and ensure the system doesn't squash it.

The government will continue to play a huge role in propping up Canada's economy throughout this crisis and using digital channels to do so. But the momentum can't slow once the urgency fades. As we move into the 2020s, governments are going to have to move faster and be smarter in taking on challenges. If they are able to use the COVID-19 crisis as a catalyst for adopting digital tools and platforms, we could see a future in which every citizen is digitally enabled to receive the services they need as soon as they need them.

<https://discover.rbcroyalbank.com/never-waste-a-crisis-how-canada-can-build-the-digital-government-of-the-future/>



RBC Wealth Management
Dominion Securities

Partaker Wealth Management of RBC Dominion Securities Inc
403.266.9647 Suite 300, 11012 Macleod Trail SE Calgary, AB T2J 6A5

Wit

"You're only as good as your last haircut." ~ Fran Lebowitz:



RBC Wealth Management
Dominion Securities

Partaker Wealth Management of RBC Dominion Securities Inc
403.266.9647 Suite 300, 11012 Macleod Trail SE Calgary, AB T2J 6A5

Home & Lifestyle

"Home is where we should feel secure and comfortable." ~ Catherine Pulsifer

Calgary gardening advice: When it's grow time, best be prepared

By Stephen Hunt - CBC News

It's not sexy, but start with feeding your soil, expert says

Spring gardening season seems to practically be upon us, particularly after a warmer-and-drier than usual March and April.

It's given plenty of Calgarians an itch to start planting.

But you're better off listening carefully to John Duncan, the green goods manager and in-house horticulturist at Greengate Garden Centre.

His advice might best be boiled down to three words: hold your horses.

(There's snow in the forecast for this weekend)



John Duncan, the green goods manager at Greengate Garden Centre in Calgary, recommends preparing your soil now for the growing season, which generally doesn't start until after the May long weekend. (CBC/Julie Debeljak)

Respect the process

"This time of year, the best thing to do if you can is to do as much prep work as you can," Duncan said in an interview with CBC's Julie Debeljak.

"Do a lot of early spring cleanup, prep your beds while the temperatures are still cool and cold," he added.

"Get everything ready so that when the time comes, you can get out there right away and do the fun stuff: plant the pretty flowers that everyone wants to do."



RBC Wealth Management
Dominion Securities

Partaker Wealth Management of RBC Dominion Securities Inc
403.266.9647 Suite 300, 11012 Macleod Trail SE Calgary, AB T2J 6A5

Duncan recommends adding compost and fertilizer to your garden's soil. (CBC NEWS/Julie Debeljak)

Feed your soil

For Duncan, the early days of grow season should be devoted to feeding your soil.

"Get as much organic material in your soil as possible, in the form of compost, manure — those kind of things to enrich your soil," he said.

Compost and other fertilizers will "improve the structure," he added. "And then you have much better success when the time comes to start planting."

"You can get it from the city, buy it by bags or in larger quantities from different gardening centres. But you want to enrich that soil whatever way you can, because our soil structure here in Calgary is very clay, so you want to add organic material to make it light and soft and more plantable," he said.

Planters vary depending on whether they're for the garden or porch, or whether they're used on apartment and condo balconies, where they may be exposed to high winds. (Julie Debeljak/CBC)

First in

There are some plants and veggies that can handle the cool nights of early spring better than others, Duncan said.

"On the vegetable side, your cold crops — things like lettuces, spinach, radishes," he said.

"Cabbage, kale, those things can be planted quite early, when the temperature is quite low — not going too far below zero, but they can still tolerate going below a little bit of frost.

"For flowering, stuff like pansies, snap dragons can tolerate a little bit of cold as well — and then that's it for early [planting]."

Grow time

So what time is grow time in Calgary?

"That is the magic crystal ball, the \$300-million question," Duncan said.

"Most people's rule of thumb is the May long weekend, but I would just look at the long-term forecast — at least a week ahead of time, nothing below zero, and then if something does go awry, covering [your plants] with towel, frost cloth, something to protect it," he added.



RBC Wealth Management
Dominion Securities

Partaker Wealth Management of RBC Dominion Securities Inc
403.266.9647 Suite 300, 11012 Macleod Trail SE Calgary, AB T2J 6A5

"And then with those very, very tender things, like begonias, maybe waiting extra long — early June — until the chance of frost has completely passed, because they don't tolerate that at all."

Common mistakes

Duncan sees a lot of excitable gardeners repeat the same mistakes over and over again.

"I've learned the lesson many times," he said.

"Sometimes, you can gamble and try [to plant] early. You may not get a frost or the weather may not go awry on you, but sometimes, just waiting until that soft time [of warmer temperatures] gets you farther ahead [than planting early] — because those plants you planted farther ahead got a little bit of frost but didn't kill them, sets them back and it takes them way longer to get them up and running than if they were planted at a more appropriate time."

Duncan says it's crucial that gardeners don't try to anticipate grow season by planting a little bit too early, because it can set back everything. (Julie Debeljak/CBC)

Indoor action

Duncan satisfies his grow itch early in the year by pre-planting and keeping them inside.

"I do all my specialty weird little things I can't get at gardening centres. I start ahead of time. I do that during the winter. It gives me that little fix of planting without actually having to deal with Mother Nature outside.

"That helps as well, and then you have a pre-start. Like I do all my first sets of vegetables, all my spinach, kale, and lettuce the first planting inside the house, so they're up, and then they get to about an inch high, and I can take them outside.

"And then I start to seed directly outside after the chance of frost has passed."

With winter weather in the forecast, Duncan doesn't see any reason to change now.

"Always my biggest thing is soil preparation," he said. "[It's] the unsexiest part of gardening that people don't want to do.

"Ideally you should be adding, on average, at least an inch or two to your garden, depending on whether or not it's a vegetable garden — but you do want every year, even on established beds, to add something, just to enrich that soil."



RBC Wealth Management
Dominion Securities

With files from Julie Debeljak.

ABOUT THE AUTHOR

Stephen Hunt-Digital Writer

Stephen Hunt is a digital writer at the CBC in Calgary. Email: stephen.hunt@cbc.ca

<https://www.cbc.ca/news/canada/calgary/calgary-gardening-tips-horticulturalist-john-duncan-1.5110857>

Health & Wellness

“The way to get started is to quit talking and begin doing.” ~ Walt Disney

The hunt for COVID-19 treatments and vaccines - By Tasneem Azim-Khan, CFA

COVID-19 has brought companies and countries together for a common goal. We examine that search for treatments and vaccines.

At the time of writing, the global COVID-19 case count has surpassed the two million mark. The unprecedented nature of this crisis, the toll on human life, and the uncharted territory from an economic and markets standpoint can feel ominous. The world's lack of preparedness for a global pandemic, from medical and economic perspectives, is without question. Yet, despite what seems to be insurmountable uncertainty, our view is that this too shall pass.

The question is more when, not if. The answer to the former relies heavily on the success of physical distancing globally to contain the spread and give the global health care system a fair shake at treating those with severe illness. But importantly, it also relies on the development of drug treatments and vaccines, and we would argue on this front, there are silver linings. That is to say, the singular focus of health care organizations, research labs, and scientists worldwide is to find a cure and vaccine for COVID-19. The rate at which resources have been rapidly mobilized in advancement of treatment, and the level of coordination and collaboration amongst health care professionals and information sharing across borders is unprecedented. As of the time of writing, there are 614 clinical trials for drug treatments for COVID-19, and 78 vaccine programs underway.

This article seeks to highlight potential new drug therapies and vaccines under investigation. Note that this discussion is not intended as a recommendation of ownership of the companies involved in these trials. Rather, we look to underscore important medical developments related to COVID-19 that we believe provide grounds for some optimism against the constant barrage of negative headlines.



RBC Wealth Management
Dominion Securities

Partaker Wealth Management of RBC Dominion Securities Inc
403.266.9647 Suite 300, 11012 Macleod Trail SE Calgary, AB T2J 6A5

In the appendices, we provide a few examples of global coordination across the health care industry.

Therapeutics versus vaccines – The race versus the marathon

It's important to distinguish between therapeutics and vaccines. Therapeutics, or more simply medications, are given to people who are sick, and therapeutic trials are given to those who are very sick, reactively. The hope with the drug is that it delays the infection, treats the infection, and hopefully makes people better.

Vaccines are given to a healthy population proactively to boost the individual immune system to produce antibodies and protect the individual from future exposure to the virus. So, while a COVID-19 drug treatment could conceivably be administered to thousands of very sick patients, a vaccine would be given to hundreds of millions (if not billions) of healthy people globally. A vaccine must be safe and effective for it to be rolled out on a mass basis worldwide—there are no shortcuts.

Vaccines are amongst the greatest achievements in public health care, though not without a history of controversies. In the late 60s, babies and toddlers that were immunized against Respiratory Syncytial Virus (RSV) experienced serious side effects including high fever, wheezing, and pneumonia when exposed to the natural wild type of virus.

There are always risks in designing a new vaccine. The faster and greater the shortcuts, the more risky the vaccine will be. A best-case scenario may be that a vaccine is developed within a year according to industry experts and medical articles.

It's not just about rushing the science but also the manufacturing—global supply chains must be equipped to manufacture the vaccine in huge amounts. Furthermore, when developed, vaccines will only be effective with buy-in from the public. Put differently, vaccines are effective in controlling breakouts if enough people get vaccinated to build so-called “herd immunity”. Even if vaccines are mandatory, compliance with such a measure, particularly during a public health emergency, is not a foregone conclusion especially since there are still sizeable portions of society that believe, vehemently, that vaccines are not just unnecessary, but harmful. That said, in light of how COVID-19 has brought the world to a standstill, perhaps such views may be altered.

Some vaccines under investigation:

Notwithstanding the complexities and extended timeline for a vaccine to be developed, there are more than 75 vaccines in early-stage development. Below is a sampling.

- **Moderna (MRNA):** This vaccine program has perhaps received the most attention. Moderna, a biotech company that develops vaccines and therapeutics, has already begun dosing patients with its



RBC Wealth Management
Dominion Securities

experimental COVID-19 vaccine. Very recently, Anthony Fauci, the director of the National Institute of Allergy and Infectious Diseases, stated that the vaccine was “on track”. The clinical trials require the vaccine to be administered in three doses to human volunteers. The first two doses have been tested, and a large third dose is being administered to check for adverse reactions. Though the vaccine is being fast-tracked, it would still be another 12–18 months before it can be made available at a mass scale even if it's approved for use, according to the company.

- **Johnson & Johnson (JNJ):** The world's largest pharma company was one of the first to announce a COVID-19 vaccine program. JNJ has said that the vaccine could be available for emergency use early next year, and manufacturing is underway. The plan is to begin human testing by September. JNJ plans to make the vaccine available “on a not-for-profit basis for emergency pandemic use”. It has been working on a vaccine since January partnering with the Biomedical Advanced Research and Development Authority (BARDA), a division of the Department of Health and Human Services. The partnership has pledged \$1 billion towards the development of a vaccine.
- **Pfizer (PFE) and BioNTech (BNTX):** BNTX is a German biotech company that specializes in vaccines. In mid-March, PFE announced the signing of a letter of intent with BNTX for the co-development and distribution of a coronavirus vaccine aimed at preventing COVID-19 infection. The recent partnership builds on a 2018 agreement to jointly develop an influenza vaccine. The additional agreement covers co-development and co-commercialization (ex-China) aimed at accelerating the development of BNTX's COVID-19 vaccine. Trials begin at the end of this month in the U.S. and Europe. The partners have also announced there are plans to scale up manufacturing capacity to produce millions of doses of vaccine during 2020 and escalate that into hundreds of millions during 2021.
- **Sanofi (SNY):** SNY is collaborating with Translate Bio (TBIO) on a COVID-19 vaccine, with the hopes to begin testing by the end of this year and approval by the second half of next year. Separately, in February, SNY announced a collaboration with BARDA to advance another type of vaccine for the disease.
- **Tuberculosis vaccine and COVID-19:** A preliminary study posted on medRxiv, a website for unpublished medical research, has found a correlation between countries that require citizens to get the Bacillus Calmette-Guérin (BCG or tuberculosis) vaccine and those showing fewer confirmed cases and deaths from COVID-19. While correlation is not causation, clinicians in at least six countries are running trials that involve giving frontline health workers and elderly people the BCG vaccine to see if it provides some level of protection against the novel coronavirus. The study was initiated when it was noticed that countries including Japan and South Korea, which have universal BCG vaccine policies, have better controlled the disease in the absence of a nationwide lockdown. Key players in the BCG vaccine segment include Merck (MRK) and SNY.

All told, even if we examine an exhaustive list of vaccines under consideration, the timeline until one becomes available on a scaled basis, is likely at least a year out. A year seems like an inordinate



RBC Wealth Management
Dominion Securities

Partaker Wealth Management of RBC Dominion Securities Inc
403.266.9647 Suite 300, 11012 Macleod Trail SE Calgary, AB T2J 6A5

amount of time in the context of nationwide lockdowns and strict guidelines around physical distancing. Yet there is still hope therapeutics, which could become available sooner than a vaccine, at a minimum can alleviate the symptoms of those with the most severe cases of the illness and, at best, ultimately provide a cure.

Some drug treatments under investigation:

Below we highlight a number of drug treatments for COVID-19 under consideration, though by no means is it an exhaustive list.

- **Remdesivir by Gilead (GILD):** This drug was initially developed for the treatment of Ebola during the 2014–2016 outbreak. While other drugs were ultimately used, the WHO has described Remdesivir as the best hope to treat the disease until a vaccine becomes available. Though China recently halted its planned trial due to poor enrolment as a result of the virus waning in the region, trials continue in the U.S. Gilead expects early data from its trial of the drug in severe patients at the end of this month, and data from a trial testing it in patients with moderate symptoms by May. Furthermore, BBC reports indicate the UK government has fast-tracked the trials, and there will be two studies carried out in the UK—one in patients with moderate symptoms and one on those who are in serious condition. In studies of mice and human cell cultures, this anti-viral showed some promise in inhibiting the viruses that cause SARS and MERS, which are both coronaviruses as is COVID-19.
- **Hydroxychloroquine and chloroquine (produced by Mylan [MYL], Teva [TEVA], Novartis [NVS], and Sanofi):** Food and Drug Administration (FDA), on March 29, issued an emergency use authorization for hydroxychloroquine and chloroquine—decades-old malaria drugs—for the treatment of COVID-19. The agency allowed the drugs to be “donated to the Strategic National Stockpile to be distributed and prescribed by doctors to hospitalized teen and adult patients with COVID-19, as appropriate, when a clinical trial is not available or feasible”. The FDA has already allowed New York state to test administering the medication to seriously ill patients, and some hospitals have added it to their treatment protocols. Still, scientists have noted the lack of data on the drugs’ efficacy for coronavirus care and are concerned it would crowd out patients who need the drugs for other serious conditions. Early data from a study conducted at the University of Wuhan showed the use of hydroxychloroquine resulted in cough, fever, and pneumonia receding faster, while the disease seemed less likely to turn severe for patients that received the drug, versus a comparison group that was not given the drug. The authors of the report said the medication was promising, but that more research was needed to clarify how it might work in treating coronavirus disease and to determine the best way to use it. In contrast, however, in a recent French study, doctors looked back at medical records for 181 patients with COVID-19 who had pneumonia and required supplemental oxygen. Roughly half had taken hydroxychloroquine within 48 hours of being admitted to the hospital, the other half had not. The doctors followed the patients and found there



RBC Wealth Management
Dominion Securities

was no statistically significant difference in the death rates of the two groups, or their chances of being admitted to the intensive care unit. The study also raised important safety concerns around the drug. For example, in the study, eight patients who took the drug developed abnormal heart rhythms and had to stop taking it. Similarly, doctors in Sweden and Brazil have warned of similar side effects with the use of chloroquine.

- **Kaletra by AbbVie (ABBV):** This is essentially a combo therapy, made up of two drugs, lopinavir and ritonavir. It is produced by AbbVie for the treatment of human immunodeficiency virus (HIV). In mid-March, it was reported that the drug failed across the board in a 199-patient clinical trial. Furthermore, it did not improve clinical symptoms nor extend lifespan in patients hospitalized with severe COVID-19. That said, there may be potential for this drug in patients for whom the drug is initiated soon after they show symptoms, but before the symptoms become severe. In patients that received Kaletra earlier, a clearer mortality benefit was demonstrated. According to an article in the Financial Times, in a drastic step to open Kaletra to competition, ABBV will not enforce global patent rights on all formulations of the HIV medication as the drug is being evaluated to treat severe COVID-19 in several clinical trials. The move comes after shortages in several drugs that are being tested for the treatment of COVID-19.
- **Actemra:** The drug, produced by Roche (RHHBY), has already been approved in China for the treatment of patients infected with COVID-19 that have developed serious lung damage. The drug, used primarily for the treatment of rheumatoid arthritis, has recently been approved by the FDA for a Phase 3 trial (named COVACTA) in severely ill COVID-19 patients, who have been hospitalized with pneumonia. Roche has also committed to providing 10,000 vials of Actemra to the U.S.'s Strategic National Stockpile for potential future use.
- **Sarilumab:** This drug is also known under its brand name Kevzara, and was approved by the FDA in 2017 for the treatment of rheumatoid arthritis. The drug was developed collaboratively by Sanofi and Regeneron (REGN). It is an antibody that may help suppress the immune response that causes so much damage in patients with COVID-19. The companies initiated a Phase 2/3 trial in Italy, Spain, Germany, France, Japan, Canada, and Russia. SNY and REGN are testing the drug in patients hospitalized with severe disease. SNY is leading the trials outside the U.S., with REGN handling trials within the U.S. The European trials are expected to enroll approximately 300 patients, according to company information.
- **Avigan:** Also referred to by its generic name, favipiravir, Avigan is produced in Japan by a subsidiary of Fujifilm. The company has begun Phase 3 clinical trials to test the effectiveness of the anti-flu drug in treating patients with COVID-19, following promising results in China. Trials in China suggest Avigan could play a role in shortening the recovery time for patients infected with novel coronavirus. The trial will be conducted on 100 patients until the end of June, according to the company. Fujifilm is expanding manufacturing capacity at its Toyoma facility to speed production of Avigan, and has established strategic partnerships with domestic and overseas companies to



RBC Wealth Management
Dominion Securities

source raw materials for the drug. With the ramp-up in production, Fujifilm is aiming to make 100,000 treatment courses of Avigan available by July—3.5 times the supply in March—and a total of 300,000 courses ready by September. The Japanese government will set aside 2 million treatment courses for its national stockpile, according to the company, which is also in discussions with foreign governments to provide additional supply.

Clinical trials are a considerable undertaking. Patience is required given the time needed for patient enrollment, running the trials, and interpretation of results. Critically, the trials that matter the most are the ones with a sizeable patient population that can yield statistically significant results. It's worth noting that effective treatments were found for Ebola after clinical trials were carried out between 2014 and 2015 in poor countries, ravaged by conflict and with little health infrastructure. While Ebola did not evolve into a pandemic, the world's health and technological capabilities and infrastructure are far more advanced today than they were five to six years ago.

Granted, in the face of daily tragedy and barrage of negative headlines, it is difficult to stay focused on the after rather than the now. However, we remain encouraged by the pace at which health care entities around the world are working to find a cure and/or vaccine, and what seems to be hyper-collaboration and coordination not seen before. As such, we choose to be cautiously optimistic—at a safe distance of course.

Appendix I: SOLIDARITY trial

The multinational trial, aptly named SOLIDARITY, will test four potential treatments for COVID-19. The trial is being coordinated by the WHO with the goal to enroll thousands of patients worldwide. Participating countries are Argentina, Bahrain, Brazil, Canada, France, Germany, Indonesia, Iran, Norway, Peru, Qatar, South Africa, Spain, Switzerland, and Thailand.

Given that a vaccine is still at least a year or more away, the aim of SOLIDARITY is to identify treatments for COVID-19 as quickly as possible to mitigate the toll of the disease. Should the trial be a success, doctors around the world will finally have evidence-based research for deciding which drugs to use, and perhaps more importantly not use, when treating COVID-19 patients with severe symptoms.

Following the 2014 outbreak of Ebola in West Africa, the WHO was criticized for its slow response. As a result, it created the R&D Blueprint as a means to ensure that the world would be better prepared for future outbreaks. The purpose of the Blueprint is to fast-track drugs and vaccines for serious and sudden outbreaks, like COVID-19.

While there are 614 clinical trials, many are small and are testing a random number of different agents (antibodies or vaccines). Some trials have had unintended negative consequences. For



RBC Wealth Management
Dominion Securities

example, after doctors in France published a tiny study (24 patients) about the potential effectiveness of hydroxychloroquine in conjunction with azithromycin (an antibiotic) for COVID-19 patients with severe symptoms, the report was referenced in a White House tweet that called the drug a “game changer”. However, many scientists have been critical of deficiencies in the study’s methodology. Subsequently, there were widespread reports of panic buying, drug shortages, and even deaths resulting from attempts by some people to self-medicate with chloroquine—a drug similar to hydroxychloroquine, though more toxic. Incorrect doses can cause coma, seizures, and death. The shortages impact not only patients with COVID-19 for whom the drug may be considered, but patients with other conditions for which chloroquine is primarily used (e.g., lupus and rheumatoid arthritis).

Trials such as SOLIDARITY are critical in that they are much larger population studies from which conclusions can be drawn with statistical significance. Data about patients will be collected and given to the WHO, where it will be consolidated with other international data, and ultimately interpreted. The study is built such that there is flexibility in introducing new drugs should they show some promise. The timing of the study will ultimately depend on how effective (or ineffective) the trial treatments are, and the number of patients ultimately enrolled.

Appendix II: COVID-19 Therapeutics Accelerator

A consortium of life sciences companies has announced plans to collaborate in the development and manufacture of vaccines, and diagnostic and treatments for COVID-19 in response to the novel coronavirus pandemic. This consortium, the COVID-19 Therapeutics Accelerator, was launched recently by the Bill and Melinda Gates Foundation, along with Wellcome (a research-charity based in London, UK), and Mastercard. It is designed to pool global resources and expertise and speed up research and development in the fight against the pandemic, and is working in tandem with the WHO, national governments, business sectors, and organizations to deliver end-to-end results “from drug pipeline development through manufacturing scale-up” with a focus on ensuring that these products are “accessible and affordable to people in low-resource settings”.

The founding entities have led funding with \$125 million. Most recently the Chan Zuckerberg Initiative, a philanthropic foundation established by Dr. Priscilla Chan and her husband Mark Zuckerberg, co-founder of Facebook, committed \$25 million to the Therapeutics Accelerator.

Pharma companies participating include Eli Lilly (LLY), GlaxoSmithKline (GSK), Johnson & Johnson, Merck, Novartis, Pfizer, and Sanofi

Required disclosures
Research resources



RBC Wealth Management
Dominion Securities

Partaker Wealth Management of RBC Dominion Securities Inc
403.266.9647 Suite 300, 11012 Macleod Trail SE Calgary, AB T2J 6A5

Non-U.S. Analyst Disclosure: Tasneem Azim-Khan, an employee of RBC Wealth Management USA's foreign affiliate RBC Dominion Securities Inc., contributed to the preparation of this publication. This individual is not registered with or qualified as a research analyst with the U.S. Financial Industry Regulatory Authority ("FINRA") and, since they are not an associated person of RBC Wealth Management, they may not be subject to FINRA Rule 2241 governing communications with subject companies, the making of public appearances, and the trading of securities in accounts held by research analysts.

<https://www.rbcwealthmanagement.com/ca/en/research-insights/the-hunt-for-covid-19-treatments-and-vaccine/detail/>

This information is provided as a courtesy by

PARTAKER

Wealth Management
of RBC Dominion Securities

If you do not wish to receive this biweekly information, please return an email to the sender with "delete" in the subject line.

This information is not intended as nor does it constitute tax or legal advice. Readers should consult their own lawyer, accountant or other professional advisor when planning to implement a strategy. This information is not investment advice and should be used only in conjunction with a discussion with your RBC Dominion Securities Inc. Investment Advisor. This will ensure that your own circumstances have been considered properly and that action is taken on the latest available information. The information contained herein has been obtained from sources believed to be reliable at the time obtained but neither RBC Dominion Securities Inc. nor its employees, agents, or information suppliers can guarantee its accuracy or completeness. This report is not and under no circumstances is to be construed as an offer to sell or the solicitation of an offer to buy any securities. This report is furnished on the basis and understanding that neither RBC Dominion Securities Inc. nor its employees, agents, or information suppliers is to be under any responsibility or liability whatsoever in respect thereof. The inventories of RBC Dominion Securities Inc. may from time to time include securities mentioned herein. In Quebec, financial planning services are provided by RBC Wealth Management Financial Services Inc. which is licensed as a financial services firm in that province. In the rest of Canada, financial planning services are available through RBC Dominion Securities Inc. This commentary is based on information that is believed to be accurate at the time of writing, and is subject to change. All opinions and estimates contained in this report constitute RBC Dominion Securities Inc.'s judgment as of the date of this report, are subject to change without notice and are provided in good faith but without legal responsibility. Interest rates, market conditions and other investment factors are subject to change. Past performance may not be repeated. The information provided is intended only to illustrate certain historical returns and is not intended to reflect future values or returns. RBC Dominion Securities Inc. and its affiliates may have an investment banking or other relationship with some or all of the issuers mentioned herein and may trade in any of the securities mentioned herein either for their own account or the accounts of their customers. RBC Dominion Securities Inc. and its affiliates also may issue options on securities mentioned herein and may trade in options issued by others. Accordingly, RBC Dominion Securities Inc. or its affiliates may at any time have a long or short position in any such security or option thereon. RBC Dominion Securities Inc.* and Royal Bank of Canada are separate corporate entities which are affiliated. *Member-Canadian Investor Protection Fund. Insurance products are offered through RBC Wealth Management Financial Services Inc., a subsidiary of RBC Dominion Securities Inc. When providing life insurance products in all provinces except Quebec, Investment Advisors are acting as Insurance Representatives of RBC Wealth Management Financial Services Inc. In Quebec, Investment Advisors are acting as Financial Security Advisors of RBC Wealth Management Financial Services Inc. RBC Wealth Management Financial Services Inc. is licensed as a financial services firm in the province of Quebec. RBC Dominion Securities Inc. is a member company of RBC Wealth Management, a business segment of Royal Bank of Canada. ®Registered trademarks of Royal Bank of Canada. Used under licence. © 2017 Royal Bank of Canada. All rights reserved.



RBC Wealth Management
Dominion Securities

Partaker Wealth Management of RBC Dominion Securities Inc
403.266.9647 Suite 300, 11012 Macleod Trail SE Calgary, AB T2J 6A5