

# The Walden Group

## 2020 Q1 Strategic Healthcare M&A Report

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*The Strategic Healthcare M&A Report analyzes important merger, acquisition and strategic transactions taking place in the healthcare industry. A complimentary copy of the Report can be obtained by subscribing at [www.waldenmed.com](http://www.waldenmed.com). With 30 years of experience and a lengthy track record, The Walden Group is a strategic merger & acquisition advisory firm focused on the healthcare industry.*

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for

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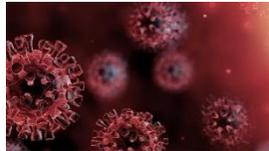
## *Impacts of the Pandemic on Medtech Companies .... The Changes that Need to be Made*

The pandemic has exposed major problems in our healthcare system, the national preparedness to meet crises, and various aspects of the business models of medical technology companies.

Left to its own devices, the profit motive will not gear corporate behavior to cover national health priorities. No surprise here in that capitalism relies on self-interested "animal spirits" to drive operating performance, leaving government to fill in gaps that private industry is not set up for. Government needs to be a partner, and its contributions extend beyond subsidies and giveaways. Social Security, Medicaid, Medicare, the FDA and other public programs provide medical and social safety nets that are not only altruistic, they add to society's well-being, which in turn, generate economic activity spurring private company performance.

Some of problems laid bare by COVID-19 include:

- **Strong Partnerships Between Government and Private Industry are Needed in Preparation for Emergencies.** Certain technologies and products lines are not profitable for private companies to make in the quantities sufficient to satisfy societal needs especially during urgent times.



In 2007, U.S. public health officials developed a plan to build inexpensive portable ventilators for the national stockpile to prepare for emergencies like coronavirus. But the effort, code-named Aura, was derailed by the natural rhythms of the private market in the absence of government involvement.

Federal officials considered vaccines, antiviral drugs, protective gear and ventilators as being critical to keep in inventory. In 2006, the Department of Health and Human Services established the Biomedical Advanced Research and Development Authority (BARDA) to help with medical responses to chemical, biological and nuclear attacks, as well as infectious diseases.

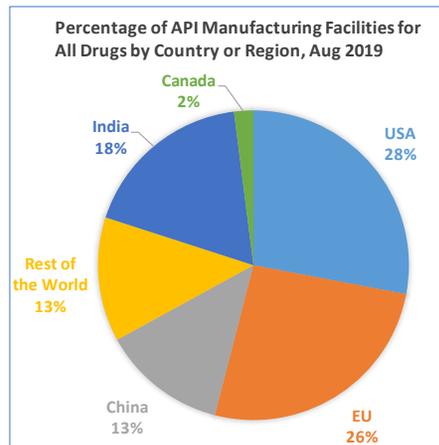
### BARDA Strategic Plan 2011-16 Excerpt

The mission of the Biomedical Advanced Research and Development Authority (BARDA) is to develop and procure medical countermeasures that address the public health and medical consequences of chemical, biological, radiological, and nuclear accidents, incidents and attacks, pandemic influenza, and emerging infectious diseases.

In 2009, the government contracted with **Newport Medical**, a small company, to design and build up to 40,000 mobile ventilators. The company sent prototypes within a year and was hoping for market approval by 2013. However, in the rush of medtech company consolidation, **Covidien** bought **Newport** in 2012 for \$108m and did not pursue the contract. The reasons are unclear but a closer-knit private-public partnership could have made it happen. **Covidien** was later acquired by **Medtronic** in 2015 for \$50b.



**Over-Concentrations Can Undermine National Security.** Historically, pharmaceuticals have largely been made domestically. However, in recent decades, drug manufacturing, especially their core components -- active pharmaceutical ingredients (APIs) – gravitated offshore. As of August 2019, only 28% of the manufacturing facilities making APIs for the U.S. market were in the U.S. Some estimates go much further -- that China supplies almost 80% of the US's APIs.



The 2019 annual report from the U.S.-China Economic and Security Review Commission warned Congress that U.S. consumers and the military are “heavily dependent” on China for drugs and APIs, arguing that this “presents economic and national security risks.”

Altogether, the U.S. imported more than \$12.7 billion worth of pharmaceuticals and antibiotics, medical devices and food products from China in 2018 (excluding APIs), according to Senator Marco Rubio do not reflect APIs. Selected 2019 imports continued the trend.

	\$ Value (millions)	% of US Imports
Anitbiotics	\$302.9	35.0%
PPE	\$1,852.2	30.0%
Medical Devices	\$3,911.3	8.6%

US International Trade Commission (Assessd Customs Value)

**Supply Chains, Procurement and Offshoring Need to be Secured.**

For decades there has been an inexorable push to lower manufacturing costs and increase margins, propelled by reimbursement cost containment measures by the US and other governments, the intensification of competition, and the relentless efforts of the Chinese government to promote its economy. At the root, globalization shifts the production of goods to regions that can make them at lower cost. Even before China opened up, Mexico, India and other countries, where labor was cheap and standards and costs of living low, were attractive places to lodge production and assembly. In the massive consolidation and PE firm buyouts that medtech has experienced over the past 15 years, quality, double-sourcing and other procurement safety measures were blurred in the windstorm of competition and short-term return-on-investment goals. Having production in China, India or Mexico was a corporate selling feature, but now over-concentration of offshore sources threatens the stability of corporate performance and our way of life.



Having a China factory was thought to be the holy grail. While it will remain extremely important, there are many difficulties and risks in making it work:

**Risks in Offshoring**

- Getting approvals from national and local governments;
- Being subservient to national changing priorities and policies, many of which can be reactive to U.S. tariffs and other policies;

- Assembling and vetting reliable management and staffing, where dependence on certain individuals and turnover will always be issues;
- Quality may not be reliable;
- Cultural differences will always be a filter; and
- Questions of confidence in the offshore market will always remain.

While the post-COVID world will be different, low-cost manufacturing will remain vital and China and the developing world remain too big a customer market to ignore. Now is good time to "stress test" every link in the supply chain to assess weaknesses and consider adding redundancies and other options. With so many resources being moved offshore, production facilities in the US, Canada and Western Europe become highly attractive.

### Benefits of US, Canadian and European Manufacturing

- **Quality.** Despite gains in product quality by third-world countries, across-the-board quality levels are far higher, more dependable and sturdier in first world countries.
- **Faster delivery times.** In the past few decades, there has been a major drive to speed up delivery times, lower inventory levels, and provide for "just-in-time" service. While healthcare providers and their vendors may opt for safer inventory levels now, domestic production adds speed and reliability and reduces risk in product deliveries.
- **Proximity to innovation on the product and production fronts.** Being close to the production line allows for ongoing

interaction to make manufacturing and workflows more efficient. Product and manufacturing innovations are related and feed off each other. New inventions need to be produced economically and reliably and often the production personnel provide insights into product features that not only make the product easier to make but easier to use in the field.

- **Easier Logistics.** The amount of resources needed to arrange for and manage offshore production is enormous. It is far simpler and easier to deal with production closer to home.
- **Marketing Benefits.** Dependability on quality has always been a huge advantage in favor of production in advanced regions. Even in third world countries, American and European made are marks of distinction. In the corona virus era, reliability and quality will become even more important in deciding on vendors. Touting Western production will be a major plus.
- **Access to Government Incentives.** Governments in the US and Europe may provide subsidies and tax and other incentives to strengthen domestic production.

**Critical Supplies and Equipment will be Prioritized.** As COVID-19 becomes more contained, better tests and new therapies are developed, and vaccines are closer to market, the healthcare system will return to higher levels in treating other conditions like heart disease, cancer, diabetes, stroke and other respiratory conditions, as well as major orthopedic procedures such as hip and knee implants that impact mobility, self-sufficiency and quality of life. Yet there will be a rebalancing



of priorities and certain product areas and procedures will remain center stage including:

- High quality masks and other personal protection equipment. Before this pandemic, China produced approximately half the world's face masks. China will continue to dominate world supply but new opportunistic vendors in the U.S. will sprout up.
- Ventilators, vital sign monitors, compact diagnostic machines, telemedicine platforms and other critical care and treatment equipment and supplies.
- Diagnostic testing supplies and testing services capacity. Many chemical reagents needed for coronavirus antibody and other virologic testing comes from China, and demand is surging. Diagnostic equipment makers are short on test kit components uniquely compatible with their testing platforms – forcing some states to secure certain test supplies specific to the available machines straight from vendors, bypassing OEM's. Several aspects of the diagnostics supply-chain -- including antibody testing accuracy and lack of standardized sample collection aspects -- have become challenges during the surge, and will spur new solutions.

**Logistics and Resource Management Systems -- Getting the Right Things to the Right Place at the Right Time -- Will be Emphasized.** Logistics technologies can be game changers in terms of company and product differentiation. New direct-to-patient supply chain and enhanced cold chain solutions are being honed to provide new drugs



and other products to patients' homes. Cloud-based information technologies are being optimized to not only respond to logjams and other problems, but also to predict their occurrence via AI and machine learning.

**The Economy's Fall Will Put Further Limits on Government Reimbursement and Stress Individual's Spending Abilities.** Before the pandemic, government budgets were already limited, moving providers into accountable care and other cost containment measures. With the trillions of dollars being spent in relief efforts, eventually budget matters and the need to expand healthcare spending will collide. The result will be further belt-tightening, forcing providers and their vendors to become even more efficient and cost-conscious. Consumers will also have less to spend on co-pays, deductibles and other out-of-pocket items.

**The Value-Based Reimbursement Model Will Be Adjusted.** For more than 10 years, CMS and other bodies have been guiding providers away from a fee-for-service models, which involve little accountability for cost containment, to a value-based model whereby providers are reimbursed to take care of disease states on a bundled products and services capitated basis. This shifting of risks to the provider also offers incentives to be efficient and quality-compliant. Yet, a recent survey of some 220 accountable care organizations nationwide reflected that about 60% are likely to abandon risk-based models to avoid financial losses. While fee-for-service is still widespread, the trend toward accountability will continue. The pandemic may even nudge providers away from models that rely on patient visits. One of the byproducts of the COVID-19 crisis is likely to be adjustment to the value-based model, not an abandonment.

**Telemedicine and Virtual Visits Will Become Normalized.** Telemedicine had been stuck in the starting blocks for years because reimbursement levels were either non-existent or too low to be profitable for doctors to render such services. With COVID-19 making many physical visits inadvisable, tele-visits can finally play a more prominent role. Virtual visits not only help protect patients and medical practices by providing patients with easier access to care, they reduce the spread of serious infections and ease burdens on providers by protecting them. Governments, schools and private industry will also migrate in part to some online platforms.



**Non-Healthcare Companies May See New Frontiers in the Sector.** Depending on how the economy rebounds, non-healthcare companies like *Ford, General Motors, Hanes, Google, Apple, Eddie Bauer* and

*New Balance* may diversify and provide some healthcare offerings. Sizing up the enormous chasms between supply and demand, many companies may identify niches for them to fill, profitably. The crisis will also open up opportunities for earlier stage companies to invent new solutions such as contact tracing apps, at-home sanitizing devices and face-masks and other Personal Protective Equipment (PPE) designed for consumers that meet or resemble National Institute for Occupational Safety and Health (“NOISH”) standards, in preparation for future pandemics.

While the pandemic is causing massive fatalities, heartache and damage to our economy, healthcare remains a necessity. The "market turbulence" is exactly the time to anticipate issues and opportunities, make adjustments, and prepare new strategies and business relationships.

*Public Companies Moving the Corona Virus Needle -- In a Fluctuating Uncertain Environment*

Sector / Product line	Company	1-Month Performance (4-21-20)	Dynamics
<b>Diagnostic Tests and Devices</b>	<b>Abbott</b>	+38.31%	<ul style="list-style-type: none"> <li>Developed and launched three diagnostic tests for COVID-19, two for the laboratory setting and one for rapid point-of-care (POC). Another lab-based antibody serology test is in the works.</li> <li>Highly publicized POC detection test shows results in less than five minutes.</li> <li>Q1 2020 sales grew 2.5% over Q1 2019 largely due to diversification as China's quarantine caused concerning declines in cardiovascular device procedures and routine core lab diagnostic volumes in February, then slowly improving in April.</li> <li>Recently announced CE Mark approvals of new cardiovascular devices, including TriClip, the world's first minimally invasive device for repairing a leaky tricuspid heart valve; Tendyne, a first of its kind device for mitral heart valve replacement, and Gallant, Abbott's next generation implantable cardiac defibrillator.</li> </ul> 
<b>Covid-19 Therapeutics Candidate</b>	<b>Amgen</b>	+22.58%	<ul style="list-style-type: none"> <li>Announced collaboration with <b>Adaptive Biotechnologies</b> to develop human neutralizing antibodies for COVID-19.</li> <li>In late March, Amgen confirmed that a highly anticipated cancer drug, AMG 510, would remain on its originally planned timeline and that its phase 2 study is fully enrolled with lung cancer patients.</li> <li>Committing up to \$12.5m to support U.S. and global COVID-19 relief efforts.</li> </ul>
<b>Covid-19 Therapeutics Candidate</b>	<b>Gilead Sciences</b>	+7.19%	<ul style="list-style-type: none"> <li>Gilead's Ebola antiviral drug remdesivir has shown anecdotal promise as a COVID therapeutic after a study published in <u>The New England Journal of Medicine</u> revealed 68% of a 53 patient "compassionate use" program showed an improvement in oxygen-class support, more than half were extubated and half were discharged within the study's 10-day treatment period. The study, however, did not include a control group so efficacy is still highly undetermined.</li> </ul>

Sector / Product line	Company	1-Month Performance (4-21-20)	Dynamics
			<ul style="list-style-type: none"> <li>On April 23<sup>rd</sup>, the World Health Organization inadvertently posted draft documents, which were then quickly removed, from a China-based study ultimately terminated due to low enrollment. The drafts that stated that remdesivir was “not associated with a difference in time to clinical improvement” compared to a standard of care control cohort. A Gilead spokesperson emphasized the study could not “enable statistically meaningful conclusions” and that “the post included inappropriate characterization of the study”.</li> </ul>
<b>Vaccines (including COVID Vaccine Adjuvant Candidate)/ Pharmaceuticals/ OTC Healthcare</b>	<b>Glaxo-SmithKline</b>	+23.58%	<ul style="list-style-type: none"> <li>Working on COVID-19 vaccine candidates using GSK’s innovative vaccine adjuvant technology, which reduces the amount of vaccine protein required per dose, easing efforts to rapidly produce and meet large market demand.</li> <li>GSK and <b>Sanofi</b> are sharing “innovative technology” to develop a vaccine candidate.</li> <li>Partnered with <b>Vir Biotechnology</b> to identify anti-viral antibodies for COVID-19.</li> <li>Prioritized supply chain to deliver more high demand products, including pain relief brand Panadol (acetaminophen), dietary supplement Emergen-C and multi-vitamin Centrum.</li> <li>Formed a collaboration with <b>AstraZeneca</b> and the <b>University of Cambridge</b> to boost testing for COVID-19. A new testing laboratory will be established at the University of Cambridge’s Anne McLaren Laboratory.</li> </ul>
<b>Covid-19 Vaccine Candidate</b>	<b>Moderna</b>	+74.68%	<ul style="list-style-type: none"> <li>Developed a new, more efficient approach to design and make vaccines via mRNA. More than 1,400 participants have been enrolled in Moderna’s infectious disease vaccine clinical studies under health authorities in the U.S., Europe and Australia.</li> <li>Phase 1 human trials of the vaccine began in the Seattle area in mid-March.</li> <li>Assuming a safe phase I, a phase 2 study is expected to start in Q2 and a phase 3 trial could begin as early as this fall with accelerated, Emergency Use Authorization (EUA) permissions from the FDA.</li> </ul>

Sector / Product line	Company	1-Month Performance (4-21-20)	Dynamics
			<ul style="list-style-type: none"> <li>In mid-April, Moderna announced it had received \$483m in federal funding to accelerate development of the vaccine candidate. The stock price surged after the announcement, closing 15.4% higher.</li> <li>The potential advantages of an mRNA approach include the ability to combine multiple mRNAs into a single vaccine, rapid discovery to respond to emerging pandemic threats, and manufacturing agility derived from the platform nature of mRNA vaccine design and production.</li> </ul>
Covid-19 Therapeutics Candidate	Novartis	+21.89%	<ul style="list-style-type: none"> <li>Novartis' <b>Sandoz</b> unit keeps shipping hydroxychloroquine doses, including 20,000 doses donated to the University of Washington for a new COVID-19 clinical trial and a consignment of 30 million doses of hydroxychloroquine to the HHS for immediate use in controlled clinical studies.</li> <li>In mid-April, the results of a retrospective, <b>National Institutes of Health</b> and the <b>University of Virginia</b>-funded <b>VA</b> study, not peer-reviewed or published in a medical journal, of 368 patients revealed that 97 patients took hydroxychloroquine had a 27.8% death rate (much higher) than the 158 patients who did not take the drug, who had only a 11.4% death rate. This particular study ultimately showed no evidence that the use of hydroxyqualoraquin, either with or without azithromycin, reduced the risk of mechanical ventilation in hospitalized patients.</li> <li>Novartis is conducting a Phase III, randomized, double-blind placebo-controlled study – the medical gold standard – where patients will be assigned one of three options: hydroxychloroquine, the combination of hydroxychloroquine and the antibiotic azithromycin, or placebo. The results of the VA research did not materially affect Novartis' stock price.</li> </ul> 

Sector / Product line	Company	1-Month Performance (4-21-20)	Dynamics
COVID-19 Therapeutic Candidate	Regeneron	+24.18%	<ul style="list-style-type: none"> <li>• Together with <b>Sanofi</b>, evaluating existing rheumatoid arthritis drug Kevzara in a multi-center, double-blind phase 2/3 clinical study in treating patients with severe cases of COVID-19. The global trial program is now enrolling patients at medical centers in the US, Italy, Spain, Germany, France, Canada and Russia. The trial is the first controlled trial in the U.S. to evaluate the effect of Interleukin-6 (IL-6) inhibition, which may manage severe damage to lung tissue, prospectively in COVID-19 patients.</li> <li>• Developing an experimental cocktail therapy that could be used as a prophylaxis and a treatment for coronavirus expected to begin testing in humans this summer.</li> <li>• FDA granted a Priority Review for a new Biologics License Application (BLA) for REGN-EB3, an investigational triple antibody combination treatment for Ebola developed via the same rapid response platform currently being leveraged to develop its novel COVID-19 antibody therapy.</li> </ul>
Biopharmaceuticals/ Diagnostics	Roche	+17.52%	<ul style="list-style-type: none"> <li>• With \$25m in backing from BARDA, initiating an accelerated global phase 3 study on Actemra, which in part clears severe lung inflammation, affecting many COVID-19 patients. The drug is a first-in-class anti-IL-6 receptor (αIL-6R) therapy, which is approved in 116 countries for the treatment of rheumatoid arthritis.</li> <li>• In mid-March, Roche received FDA EUA for its cobas® SARS-CoV-2 Test to detect the virus that causes COVID-19.</li> </ul>
Biopharmaceuticals	Sanofi	+27.83%	<ul style="list-style-type: none"> <li>• Studying two existing medicines as potential treatments for COVID-19 – Kevzara (sarlumab, a collaboration with <b>Regeneron</b>) and branded hydroxychloroquine, Plaquenil. Kevzara is a monoclonal antibody that inhibits the interleukin-6 (IL-6) pathway by binding and blocking the IL-6 receptor.</li> <li>• Regarding hydroxychloroquine -- efficacy in treating COVID-19 is still subject to further review after being tried as an experimental, off-label therapeutic in some COVID patients. Sanofi committed to donating 100 million doses of hydroxychloroquine to 50 countries around the world before preliminary results in an <b>NIH/University of Virginia</b>-funded study failed to demonstrate any benefit taking the drug in COVID cases. A recent</li> </ul>

Sector / Product line	Company	1-Month Performance (4-21-20)	Dynamics
			<p>study in France also failed to show a statistically significant difference in death rates between COVID patients given hydroxychloroquine and those not given the treatment.</p> <ul style="list-style-type: none"> <li>Sanofi and <b>Translate Bio</b> are expanding an infectious disease collaboration to include work on a new mRNA vaccine for COVID-19, joining similar efforts by <b>Moderna, CureVac</b> and a partnership between <b>Pfizer</b> and <b>BioNTech</b>.</li> <li>Sanofi has also joined forces with <b>GSK</b> to develop an adjuvanted COVID-19 vaccine.</li> </ul>
Diagnostic Tests	Danaher	+18.78%	<ul style="list-style-type: none"> <li><b>Cepheid</b>, a unit of Danaher, announced it received an EUA from the FDA to use its Cepheid Xpert Xpress SARS-CoV 2 test in late March. The point-of-care diagnostic can return a result in 45 minutes.</li> <li>In early April, Danaher closed its \$21b buyout of <b>GE's Biopharma</b> business.</li> </ul>
Diagnostic Testing Services	LabCorp	+38.18%	<ul style="list-style-type: none"> <li>Announced the availability of its coronavirus NAA test in early March and is now able to perform ~55,000-65,000 tests per day and expects capacity to increase, assuming supplies are available.</li> <li>Preparing to provide POC testing for hospital use with <b>Cepheid's</b> recently announced Xpert Xpress SARS-CoV-2 molecular test once made commercially available.</li> <li>Dedicating the first hour of service each day at its service centers across the U.S. for non-COVID-19 testing needs of its most vulnerable patients -- who are 65 or older or who have serious underlying health conditions, since late March.</li> <li>Collaborating with <b>Ciox Health</b> to create comprehensive COVID-19 patient data registry to enable researchers to better understand diagnoses and treatments.</li> </ul>
Diagnostic Testing Services	Quest Diagnostic	+25.54%	<ul style="list-style-type: none"> <li>Prioritizing patients who are more vulnerable to serious complications from COVID-19 infection, including those over the age of 60 and those with conditions that raise the risk of unfavorable outcomes.</li> <li>While at the forefront of the COVID-19 testing efforts, Quest has suffered from lower demand for other testing and has had to initiate certain cost-cutting changes to maintain margins to adjust to anticipated revenue short-falls in Q2. In mid-April, Quest furloughed 10% of its workforce but has continued to appeal to investors given its key role in COVID</li> </ul>

Sector / Product line	Company	1-Month Performance (4-21-20)	Dynamics
			testing, performing 40,000 tests a day using <b>Roche's</b> highly automated cobas SARS-CoV-2 platform and Quest's internally developed Qualitative Real-Time RT-PCR test. Quest lab services has processed nearly half of all tests across the U.S.
Diagnostic Equipment / Tests / PPE	Thermo Fisher	+14.82%	<ul style="list-style-type: none"> <li>Partnering with <b>3M</b> and <b>Ford</b> to make respirators, face shields, ventilators, gowns and COVID-19 test kits to fight against the deadly virus. Ford stated that it was "lending" its manufacturing support to help Thermo Fisher expand test collection kit production.</li> <li>Supplying all the coronavirus tests needed to ramp up screening in the UK to 100,000 a day.</li> <li>On March 26, Thermo Fisher received the CE mark in the European Union for its diagnostic test to detect COVID-19. The test, which uses <b>Applied Biosystems'</b> TaqPath Assay and real-time PCR technology, is designed to provide patient results within four hours of a sample being received by a lab.</li> <li>Its acquisition of <b>Qiagen</b> is pending bridge financing.</li> </ul>
Single Use PPE	3M	+13.40%	<ul style="list-style-type: none"> <li>Doubled output of N95 respirators -- global output rate has been doubled to ~100 million respirators/month.</li> <li>Partnering with <b>Ford</b> and <b>Cummins</b> to increase supply of Powered Air Purifying Respirators (PAPRs) for healthcare workers.</li> <li>Optimizing supply chain to expedite shipments to health care customers -- In the U.S., 90% of our N95 respirators designated for healthcare workers; remainder for critical industries including: food, energy and pharmaceutical.</li> <li>Working with law enforcement and retail partners to identify unethical, illegal counterfeiters and price-gougers related to 3M's respirators. On April 13, 3M files a lawsuit accusing a New Jersey company of price gouging and deceptive trade practices in the sale of its N95 respirator masks.</li> </ul> 

Sector / Product line	Company	1-Month Performance (4-21-20)	Dynamics
Vaccines (including COVID 19 Candidate) / Devices / OTC Healthcare	Johnson & Johnson	+24.85%	<ul style="list-style-type: none"> <li>J&amp;J and BARDA have developed a \$1b R&amp;D partnership to initiate human clinical trials for a vaccine candidate in Sept. 2020 with commercial availability in early 2021, assuming EUA from the FDA.</li> <li>Increasing production of Tylenol by running the manufacturing plant 24/7 to maximize supply. Tylenol is one of the most iconic and trusted brands by consumers and healthcare professional for reducing fever. Also refocusing manufacturing lines to make our easiest-to-produce pills - white Tylenol caplets.</li> <li>Utilizing 3D printing expertise in collaboration with <b>Prisma Health</b> to manufacture and distribute the VESper ventilator expansion splitter device, which addresses the acute ventilator shortage during the pandemic.</li> </ul>
Ventilators / Vaccine Adjuvants / Devices / PPE	Boston Scientific	+28.67%	<ul style="list-style-type: none"> <li>In mid-April, Boston Scientific's BTG Specialty Pharmaceuticals division announced a license agreement with <b>Soligenix</b> for the exclusive worldwide license of CoVaccine HT, a novel vaccine adjuvant, for uses in SARS-CoV-2, the cause of COVID-19, and pandemic flu -- boosting Soligenix's stock by 10% and helping Boston Scientific's stock to rebound after announcing flat to slightly increased revenues in Q1 due to the delay of elective surgeries.</li> <li>BSX is at the forefront of producing urgent supplies to healthcare workers including faceshields and has partnered with the <b>University of Minnesota Bakken Medical Device Center</b> and other industry players to bring a ventilator alternative to market. Boston Scientific is also developing a reusable personal respirator.</li> </ul>
Robotic Surgery Equipment	Intuitive Surgical	+25.99%	<ul style="list-style-type: none"> <li>Surgery deferrals -- specifically hernia repair, benign gynecology and bariatric procedures due to COVID-19 -- had a material impact on operations broadly, including robotic-assisted surgery -- causing a 14% decline in Q1 2020 revenues compared to Q4 2019.</li> <li>Starting with China, procedure performance was impacted by COVID earliest with sharp declines and then a steady recovery. Europe and the U.S. saw significant declines in procedure volume beginning mid-March.</li> </ul>

Sector / Product line	Company	1-Month Performance (4-21-20)	Dynamics
			<ul style="list-style-type: none"> <li>Hospitals have deferred purchase decisions to adjust to lower surgery volumes and Intuitive CFO Marshall Mohr expects that to continue until facilities can address procedures in backlog.</li> <li>237 da Vinci systems was shipped in Q1 2020, up slightly from the 235 systems shipped in Q1 2019. Install base of da Vinci systems increased by 11% to ~5,669 systems.</li> </ul>
<b>Ventilators / Respiratory / Cardiovascular Equipment</b>	<b>Medtronic</b>	+26.01%	<ul style="list-style-type: none"> <li>The FDA granted Medtronic authorization to sell its Puritan Bennett 560 (PB560) ventilator in the U.S. through the agency's EUA authority in early April. After a lack luster March, Medtronic's stock price has rebounded as the PB560 is compact, lightweight, and portable and can be used in clinical settings and at home with a selling price under \$10,000.</li> <li>The U.S. government is facilitating the supply of COVID-related material, including those of Medtronic and other ventilator makers.</li> <li>By the end of April, Medtronic projected to be producing 400 ventilators a week across four models, increasing to 700 a week by the end of May and 1,000 by the end of June, representing a 5x production capacity compared to pre-COVID levels.</li> <li>Medtronic also has another model called the PB980 in limited market release in two U.S. hospitals that enables clinicians to adjust ventilator settings remotely, outside of the ICU. Production will ramp up depending on performance.</li> </ul> 
<b>Ventilators / 3D Printing</b>	<b>Zimmer Biomet</b>	+30.43%	<ul style="list-style-type: none"> <li>The decline in elective procedure volumes observed in the first quarter to continue to have a significant negative impact.</li> <li>Despite COVID-19-related headwinds to procedural volumes, ZBH has made good progress in resolving product supply issues.</li> <li>Partnering with an industry coalition and using 3-D printing technology to produce critical components for ventilators and face shields for healthcare professionals.</li> <li>Modulating manufacturing output and proactively reducing certain variable costs and discretionary spending.</li> </ul>

## Key M&A Developments (Big Deals and COVID-related Developments)

### Addressing the Global Need for Testing – For COVID and Beyond

**Thermo Fisher is Buying Qiagen for \$11.5b:** After months of public back-and-forth, these two diagnostic giants announced that they had struck an \$11.5b “megadeal” in early March. **Thermo Fisher Scientific**, a \$25.5b developer of diagnostic instruments, reagents, consumables and specialty laboratory products adds, in **Qiagen**, a \$1.5b Netherlands-based provider of life science and molecular diagnostic equipment with nearly 5,100 employees across 35 sites in 25+ countries. **Qiagen’s** testing platforms extract, isolate, and purify DNA, RNA, and proteins from a range of biological samples, enrich target substances and therefore enhance analytics. **Thermo Fisher** expects total synergies of \$200m within three years, including \$150m in cost synergies and a \$50m in revenue synergies. The **Qiagen** deal was announced roughly a year after **Thermo Fisher** acquired **Brammer Bio**, a gene and cell therapy CDMO, for \$1.7b.



In late March, **Qiagen** began shipping to the U.S. a rapid diagnostic test for COVID-19, which requires less than one minute for sample preparation and can deliver results in about one hour. **Qiagen** reported that Q1 revenues and EPS are expected to be significantly higher than previously issued guidance, primarily due to sales of COVID-19 testing products. The deal builds on **Thermo Fisher’s** prominent role at the forefront of COVID testing, and screening for other infectious diseases. In mid-March, **Thermo Fisher** itself developed and announced

the launch of a diagnostic that detects nucleic acid from SARS-CoV-2, the virus that causes COVID-19. The test was granted an EUA for use by Clinical Laboratory Improvement Amendments (CLIA) high-complexity laboratories in the U.S.

**Bio-Rad Builds on Precision Medicine and Single-Cell Analysis Capabilities:** While just announced in April, **Bio-Rad** is acquiring **Celsee**, a developer of instruments and consumables for the isolation, detection and analysis of single cells. **Celsee’s** Genesis System enables users to isolate and interpret cellular behavior and examine detailed cell-based information for use in single-cell cytometry, single-cell transcriptomics, single-cell multi-omics, rare-cell enrichment and enumeration.

A week before the **Celsee** announcement, **Bio-Rad** announced the launch of a blood-based immunoassay kit used to identify COVID-19 antibodies undergoing clinical evaluation in several hospitals with 700 samples having shown specificity above 99% already. The company plans to offer the immunoassay kit globally and use the FDA’s EUA process to expedite availability.

**Quest Diagnostics** acquired Finland-based **Blueprint Genetics**, which developed a system of proprietary guideline-supported methods of gene variant interpretation of data generated from next generation sequencing. **Blueprint** recently established a hub facility in Seattle and serves customers in 70+ customers. It provides 3,900 targeted single gene and over 200 panel tests spanning 14 medical specialties. While this transaction relates to rare diseases -- which affect up to 30 million Americans and does not address COVID – the deal presents a new long-term growth opportunity. While, as of mid-April,

Quest has performed roughly 800,000 or 40% of all testing in the US by commercial labs, its overall testing volumes declined 40% in the last two weeks of March, prompting the company to furlough 4,000 employees or nearly 9% of its workforce, reduce wages up to 20% in some cases and suspend its contributions to employee 401k plans. Quest has also announced that it is preparing to offer antibody testing to those who have been exposed and built immunity to COVID-19.

### New Hurdles for M&A Activities

The overall COVID-19 resource re-deployment postponed elective surgeries, routine in-person doctor visits, and even chemotherapy and radiation sessions. It stalled travel, ravaged nursing homes and transformed many hospitals into COVID-specific treatment centers – all factors that have added major complexities to financial performance, strategy, deal-making and integration. Several transactions pending regulatory review with previously planned closings in Q1 have since been pushed out, while others that the Federal Trade Commission (FTC) did not approve and perhaps otherwise would have been re-visited following a restructuring may not materialize at all given lengthier review processes and the aforementioned byproducts of the COVID response:



**Mylan's Merger with Pfizer's Upjohn Business Delayed Due to COVID.** “Unprecedented circumstances”, according to **Mylan** and **Pfizer**, including social distancing, concerns for employees and regulatory processes, to merge these two complementary businesses into **Viatis** is now expected to close in

the second half 2020. Upjohn, Pfizer’s off-patent drugs division includes Lipitor, Celebrex, Lyrica, and Viagra, and a trusted track-record of commercialization capabilities.

**J&J’s Acquisition of Takeda’s TachoSil Surgical Patch Abandoned on Anti-competitive Grounds.** While many surgeries are suspended temporarily, J&J’s Ethicon Division had to terminate its proposed acquisition of Takeda’s TachoSil, shortly before announcing a global medical device sales decline of 8.2% in Q1 2020. TachoSil is a fibrin sealant to control bleeding during surgery. J&J, however, sells Evarrest, the only other US-approved fibrin sealant patch designed to stop bleeding during surgery. Following the FTC’s investigation citing anti-competitive concerns, J&J has walked away after almost a year of efforts to close the deal. J&J’s overall Q1 profits however have improved as its consumer health and pharmaceutical divisions thrive as many have stocked up on medications

**Novartis terminates its \$1b Sandoz US divestiture to Aurobindo.** Novartis’ divestment of Sandoz’s US generic oral solids and dermatology businesses, including roughly 300 products in the pipeline, was mutually terminated in early April citing unexpected timelines relating to FTC review and approval.

**Stryker/Wright Deal Not on 100% Footing.** Following Stryker’s premerger notification filing with the FTC in late 2019, the FTC requested additional information relating to the anticompetitive consequences of this proposed \$4b merger. Initial plans to close this deal in the second half of 2020 may no longer be realistic as a prominent Wright shareholder also has filed a proposed class action lawsuit to block the deal contesting that

the solicitation statement sent to shareholders was incomplete and therefore misleading to investors. Amid the pandemic, these regulatory complications represent lengthier roadblocks and the climate may change the dynamics of the deal.

### Competition in Surgical Robotics Heats Up

#### **Medtronic acquired a Surgical Artificial Intelligence, Data and Analytics, and Digital Education Platform in UK-based Digital Surgery.**

The acquisition builds on Medtronic's own robot-assisted surgery system, the Huge RAS, unveiled in September 2019. These strategic moves position Medtronic to compete with Intuitive's da Vinci SP as the number of robotically assisted procedures is projected to significantly increase over the next 10 years, offering cost savings to facilities and improved precision to surgeons, among other benefits in certain settings.



**Intuitive Surgical**, itself, acquired **Orpheus Medical**, a provider of clinical video and imaging documentation platforms, to improve physician and OR care team workflow to accompany its da Vinci system.

### COVID-19 Vaccines/Treatments in The Pipeline

Product	Type	Company	Category/ Platform	Description/Dynamics
<b>Actemra</b>	Treatment	Roche	Anti-Inflammatory	<ul style="list-style-type: none"> <li>Blocks the interleukin-6 receptor, which reduces the inflammatory response in rheumatoid arthritis patients.</li> <li>Phase III trial</li> </ul>
<b>Avigan</b>	Treatment	Fujifilm	Anti-viral growth	<ul style="list-style-type: none"> <li>Blocks RNA polymerase associated with influenza viral replication.</li> <li>Phase II/III trial.</li> <li>Commercialized in Japan for treating influenza.</li> </ul>
<b>CD24Fc</b>	Treatment	Oncolmmune	Anti-Inflammatory	<ul style="list-style-type: none"> <li>A recombinant fusion protein that targets a novel immune pathway checkpoint.</li> <li>Phase III trial.</li> </ul>
<b>Chloroquine and hydroxychloroquine</b>	Treatment	Novartis, Sanofi (Plaquenil®, hydroxychloroquine sulfate), Bayer (Resochin®, Chloroquine diphosphate), and more.	Anti-viral growth	<ul style="list-style-type: none"> <li>Being tested in various clinical trials.</li> <li>Decreases the acidity in endosomes, compartments inside cells that are used to ingest outside material and that some viruses can coopt to enter a cell.</li> <li>In March, The U.S. FDA approved limited EUA for chloroquine and hydroxychloroquine as a treatment for COVID-19.</li> <li>Retrospective, VA study funded by NIH and University of Virginia, not peer-reviewed or formally published in a medical journal, showed no evidence that hydroxychloroquine reduced the risk of mechanical ventilation.</li> </ul>
<b>COVID-HIG COVID-EIG</b>	Treatment	Emergent BioSolutions	Plasma	<ul style="list-style-type: none"> <li>COVID-HIG is manufactured from human plasma with antibodies</li> <li>COVID-EIG is manufactured from plasma of immunized horses</li> </ul>
<b>Lenzilumab</b>	Treatment	Humanigen	Anti-Inflammatory	<ul style="list-style-type: none"> <li>A monoclonal antibody that neutralizes GM-CSF, a cytokine up-regulated in COVID-19 patients that can cause a harmful immune response.</li> </ul>

Product	Type	Company	Category/ Platform	Description/Dynamics
				<ul style="list-style-type: none"> <li>Conducting a multicenter, Phase III, double-blinded clinical trial with lenzilumab to reduce or prevent “cytokine storm” – causing acute respiratory distress syndrome (ARDS) resulting from coronavirus infection.</li> </ul>
<b>Remdesivir</b>	Treatment	Gilead Sciences	Anti-viral growth	<ul style="list-style-type: none"> <li>Shuts down viral replication by inhibiting a key viral enzyme, the RNA-dependent RNA polymerase.</li> <li>Originally developed to treat Ebola and related viruses.</li> <li>Several COVID-19 patients diagnosed in the U.S. were given remdesivir, and then improved or recovered but clinical efficacy is subject to further review.</li> </ul>
<b>Ritonavir/ lopinavir</b>	Treatment	AbbVie	Anti-viral growth	<ul style="list-style-type: none"> <li>A protease inhibitor inhibits the protease of other viruses, specifically coronaviruses.</li> <li>Yielded no improvement in a Phase III trial in China but remains in other clinical studies.</li> <li>Approved in the U.S. in 2000 to treat HIV infections.</li> </ul>
<b>TAK-888</b>	Treatment	Takeda Pharmaceutical	Plasma	<ul style="list-style-type: none"> <li>Anti-SARS-CoV-2 polyclonal hyperimmune globulin (H-IG) designed to treat high-risk patients.</li> <li>Concentrated pathogen-specific antibodies are collected from people who have recovered from COVID-19, then transfused into patients with active coronavirus infections.</li> </ul>
<b>Baricitinib</b>	Treatment	Eli Lilly	Anti-viral growth/ Anti-Inflammatory	<ul style="list-style-type: none"> <li>Entered into agreement with National Institute of Allergy and Infectious Diseases to study baricitinib as part of the institute's Adaptive COVID-19 Treatment Trial.</li> <li>Baricitinib, marketed as Olumiant, is approved in more than 65 countries to treat adults with moderately to severely active rheumatoid arthritis</li> </ul>
<b>Gimsilumab</b>	Treatment	Roivant Sciences	Monoclonal antibody	<ul style="list-style-type: none"> <li>A clinical-stage, human monoclonal antibody.</li> <li>Targets granulocyte-macrophage colony stimulating factor (GM-CSF), which is a pro-inflammatory cytokine found in high levels in the serum of COVID-19 patients.</li> </ul>

Product	Type	Company	Category/ Platform	Description/Dynamics
<b>Ad5-nCoV</b>	Vaccine	CanSino Bio	Non-Replicating Viral Vector	<ul style="list-style-type: none"> <li>• Non-replicating viral vector.</li> <li>• Based on previous success in the Ebola virus.</li> </ul>
<b>BNT162</b>	Vaccine	Pfizer and BioNTech	RNA	<ul style="list-style-type: none"> <li>• An mRNA-based vaccine</li> <li>• Clinical testing to begin late April</li> </ul>
<b>BPI-002</b>	Vaccine Ad-junct/Treatment	BeyondSpring	Antiviral/T-cell co-stimulator	<ul style="list-style-type: none"> <li>• An orally administered small molecule agent.</li> <li>• Activates CD4+ helper T cells and CD8+ cytotoxic T cells and generating an immune response in the body.</li> <li>• Has potential to directly attack and kill RNA virus without precipitating limiting toxicities and could possibly provide long-term protection against COVID-19 when combined with a vaccine</li> </ul>
<b>ChAdOx1 nCoV-19</b>	Vaccine	University of Oxford	Non-Replicating Viral Vector	<ul style="list-style-type: none"> <li>• An adenovirus vaccine vector.</li> <li>• Uses a non-replicating virus to deliver RNA into cells.</li> <li>• Enrolls 500+ individuals to test.</li> </ul>
<b>Fusogenix DNA vaccine</b>	Vaccine	Entos Pharmaceuticals	DNA	<ul style="list-style-type: none"> <li>• Uses the Fusogenix drug delivery platform, a proteo-lipid vehicle that introduces genetic payload directly into the cells, to prevent COVID-19 infections.</li> </ul>
<b>INO-4800</b>	Vaccine	Inovio Pharmaceuticals	DNA	<ul style="list-style-type: none"> <li>• Directly delivers optimized plasmids into cells intramuscularly or intradermally using its hand-held smart device</li> <li>• Phase I trial</li> </ul>
<b>mRNA-1273 vaccine</b>	Vaccine	Moderna	RNA	<ul style="list-style-type: none"> <li>• Directs the body's cells to express a virus protein using messenger RNA platform.</li> <li>• The phase I trial started in March, enrolling 45 healthy adult volunteers.</li> </ul>

**Top Deals > \$100m in Transaction Value Since 1/1/2019 (announced or closed)**

Sector	Acquiror	Target	TransValue (millions)	Target Sales (millions)	Target EBITDA (millions)	Sales Multiple	EBITDA Multiple
Animal Health	JAB Holding Co.	Majority Stake in Compassion-First Pet Hospitals	\$1,215.0	-	-	-	-
	Heska Corporation	Scil animal care business of Covetrus, Inc.	\$110.0	-	-	-	-
Biopharmaceuticals	Bristol-Myers Squibb Company	Celgene Corporation	\$74,000.0	\$13,000.0	\$5,480.0	5.7x	13.5x
	AbbVie Inc.	Allergan plc	\$63,000.0	\$15,787.0	\$385.0	4.0x	163.6x
	Amgen Inc.	The worldwide rights to Otezla® from Celgene Corporation	\$13,400.0	\$1,600.0	-	8.4x	-
	Pfizer Inc.	Array BioPharma Inc.	\$11,400.0	\$92.0	-	123.9x	-
	Novartis AG	The Medicines Company	\$9,700.0	\$6.0	-	1616.7x	-
	Eli Lilly and Company (Lilly)	Loxo Oncology, Inc.	\$8,000.0	\$21.3	-	375.6x	-
	Gilead Sciences, Inc.	Forty Seven Inc.	\$4,900.0	\$15.7	-	312.5x	-
	Roche Holding AG	Spark Therapeutics	\$4,800.0	\$65.0	-	73.8x	-
	Astellas Pharma Inc.	Audentes Therapeutics, Inc.	\$3,000.0	-	-	-	-
	Merck & Co.	ArQule, Inc.	\$2,700.0	\$470.0	-	5.7x	-
	Amgen Inc.	20.5% stake in BeiGene, Ltd.	\$2,700.0	-	-	-	-
	Sanofi SA	Synthorx, Inc.	\$2,500.0	-	-	-	-
	Permira Holdings Limited	Cambrex Corporation	\$2,400.0	\$531.0	\$111.0	4.5x	21.6x
	UCB S.A.	Ra Pharmaceuticals, Inc.	\$2,100.0	\$2.5	-	840.0x	-
	H. Lundbeck A/S	Alder Biopharmaceuticals, Inc.	\$2,000.0	\$1.7	-	1176.5x	-
	Thermo Fisher Scientific Inc.	Brammer Bio, LLC	\$1,700.0	\$250.0	-	6.8x	-
	Roche Holding AG	Promedior, Inc	\$1,400.0	\$112.0	-	12.5x	-
	Catalent, Inc.	Paragon Bioservices, Inc.	\$1,200.0	\$65.0	-	18.5x	-
	Eli Lilly and Company (Lilly)	Dermira, Inc.	\$1,100.0	\$82.9	-	13.3x	-
	Merck & Co.	Peloton Therapeutics, Inc.	\$1,050.0	-	-	-	-
Ipsen S.A	Clementia Pharmaceuticals	\$1,000.0	-	-	-	-	

Sector	Acquiror	Target	TransValue (millions)	Target Sales (millions)	Target EBITDA (millions)	Sales Multiple	EBITDA Multiple
Biopharmaceuticals	Vertex Pharmaceuticals Incorporated	Semma Therapeutics	\$950.0	-	-	-	-
	Alexion Pharmaceuticals	Achillion Pharmaceuticals	\$930.0	-	-	-	-
	Swedish Orphan Biovitrum AB (Sobi)	Dova Pharmaceuticals	\$915.0	\$13.3	-	68.8x	-
	FUJIFILM Holdings Corporation	Biogen Manufacturing ApS	\$890.0	-	-	-	-
	Royalty Pharma	The intellectual property rights associated with thrombocytopenia drug Promacta (eltrombopag) of Ligand Pharmaceuticals Incorporated	\$827.0	-	-	-	-
	Biogen, Inc.	Nightstar Therapeutics	\$800.0	-	-	-	-
	Merck & Co.	Tilos Therapeutics, Inc.	\$773.0	-	-	-	-
	Merck & Co.	Calporta Therapeutics	\$576.0	-	-	-	-
	GlaxoSmithKline plc (GSK)	Sitari Pharmaceuticals, Inc.	\$465.0	-	-	-	-
	Glaukos Corporation	Avedro, Inc.	\$407.6	\$36.0	-	11.3x	-
	Charles River Laboratories International, Inc.	HemaCare Corporation	\$380.0	\$24.6	\$8.3	15.4x	45.8x
	Boehringer Ingelheim	AMAL Therapeutics SA	\$366.2	-	-	-	-
	Pfizer Inc.	TherAchon SAS	\$340.0	-	-	-	-
	Takeda Pharmaceutical Company Limited	PvP Biologics, Inc.	\$330.0	-	-	-	-
	Novartis AG	IFM Tre, Inc.	\$310.0	-	-	-	-
	Lundbeck A/S	Abide Therapeutics Inc.	\$250.0	-	-	-	-
	Zogenix, Inc	Modis Therapeutics, Inc	\$250.0	-	-	-	-
Vertex Pharmaceuticals Incorporated	Exonics Therapeutics	\$245.0	-	-	-	-	
Bayer AG	59.2% stake in BlueRock Therapeutics	\$240.0	-	-	-	-	

Sector	Acquiror	Target	TransValue (millions)	Target Sales (millions)	Target EBITDA (millions)	Sales Multiple	EBITDA Multiple
Biopharmaceuticals	Acino Holding Ltd	Select Rx and OTX products of Takeda Pharmaceutical Company Limited	\$200.0	-	-	-	-
	Mesa Laboratories, Inc.	Gyros Protein Technologies Holding AB	\$180.0	-	-	-	-
	H.I.G. Capital	BioVectra Inc.	\$175.0	-	-	-	-
	Sarepta Therapeutics Inc.	Myonex Therapeutics	\$165.0	-	-	-	-
	Astellas Pharma Inc.	Xyphos Biosciences, Inc.	\$120.0	-	-	-	-
	Thermo Fisher Scientific Inc.	a drug substance manufacturing site in Ireland from GlaxoSmithKline plc (GSK)	\$100.5	-	-	-	-
	Alkermes plc	Rodin Therapeutics Inc.	\$100.0	-	-	-	-
	Conatus Pharmaceuticals Inc.,	Histogen Inc.	\$100.0	-	-	-	-
Data Management/ Healthcare IT	Dassault Systemes SE	Medidata Solutions Inc	\$5,800.0	\$636.0	\$51.0	9.1x	113.7x
	Veeva Systems Inc	Crossix Solutions	\$430.0	-	-	-	-
	Hill-Rom Holdings, Inc.	Voalte, Inc	\$180.0	\$40.0	-	4.5x	-
Dental	Cantel Medical Corp.	Hu-Friedy Mfg. Co.	\$725.0	\$214.0	-	3.4x	-
	Align Technology Inc.	Exocad Global Holdings GmbH	\$376.0	-	-	-	-
	NZ Bidco Limited	Abano Healthcare Group Ltd	\$189.6	\$223.0	\$13.8	0.9x	13.7x
Diagnostics	Danaher Corporation	The Biopharma business of General Electric Company ("GE")	\$21,400.0	\$3,200.0	\$1,260.0	6.7x	17.0x
	Thermo Fisher Scientific, Inc	QIAGEN N.V.	\$11,500.0	\$1,500.0	\$228.0	7.7x	50.4x
	Exact Sciences Corp.	Genomic Health Inc	\$2,800.0	\$394.0	\$29.0	7.1x	96.6x
	FUJIFILM Holdings Corp	The diagnostic imaging business of Hitachi Ltd	\$1,560.0	-	-	-	-
	Agilent Technologies Inc.	BioTek Instruments Inc	\$1,165.0	\$162.0	-	7.2x	-

Sector	Acquiror	Target	TransValue (millions)	Target Sales (millions)	Target EBITDA (millions)	Sales Multiple	EBITDA Multiple
Diagnostics	PHC Holdings Corp (formlery Panasonic)	The anatomical pathology business of Thermo Fisher Scientific Inc	\$1,140.0	\$350.0	-	3.3x	-
	Sartorius AG	Life Science portfolio of Danaher Corporation	\$750.0	\$140.0	-	5.4x	-
	Bracco Imaging S.p.A.	Blue Earth Diagnostics Ltd.	\$450.0	\$140.0	-	3.2x	-
	Stryker Corp.	Mobius Imaging LLC	\$370.0	\$0.0	-	-	-
	Abcam Plc	Three business units of Expedeon AG (formerly Sygnis AG)	\$133.0	\$13.1	-	10.2x	-
Medical Devices	3M Company	Acelity, Inc. and its KCI subsidiaries worldwide	\$6,725.0	\$1,500.0	\$441.0	4.5x	15.2x
	Stryker Corp.	Wright Medical Group N.V.	\$4,000.0	\$910.0	\$103.8	4.4x	38.5x
	Johnson & Johnson	Auris Health, Inc.	\$3,400.0	-	-	-	-
	Siemens Healthineers AG	Corindus Vascular Robotics (Corindus)	\$1,100.0	\$15.3	\$0.0	71.9x	-
	Recipharm AB	Consort Medical plc	\$674.0	\$412.0	\$60.0	1.6x	11.2x
	Smith & Nephew plc	Osiris Therapeutics, Inc.	\$660.0	\$142.8	\$10.8	4.6x	61.1x
	LABORIE Medical Technologies	Clinical Innovations, LLC	\$525.0	-	-	-	-
	Montagu Private Equity	The OEM business of RTI Surgical Holdings	\$490.0	-	-	-	-
	Boston Scientific Corporation (BSX)	Vertiflex, Inc.	\$465.0	\$60.0	-	7.8x	-
	CONMED Corporation	Buffalo Filter LLC	\$365.0	-	-	-	-
	Baxter International, Inc.	Seprafilm Adhesion Barrier and related assets of Sanofi SA	\$350.0	\$100.0	-	3.5x	-
	Eurazeo Capital	Dutch Ophthalmic Research Center BV ( DORC)	\$340.0	\$140.0	-	2.4x	-
	Catalent, Inc.	MaSTherCell Global, Inc.	\$315.0	-	-	-	-

Sector	Acquiror	Target	TransValue (millions)	Target Sales (millions)	Target EBITDA (millions)	Sales Multiple	EBITDA Multiple
Medical Devices	Alcon	PowerVision Inc.	\$285.0	-	-	-	-
	Baxter International Inc.	Cheetah Medical, Inc.	\$190.0	-	-	-	-
	Audax Management Company, LLC.	The Aspen Surgical Unit of Hillrom Holdings, Inc.	\$170.0	\$100.0	-	1.7x	-
	Medline Industries, Inc.	The Namic fluid management business of AngioDynamics, Inc.	\$167.5	\$0.0	-	-	-
	Blue Sail Medical Co. Ltd. (BSM)	New Valve Technology (NVT) AG	\$160.0	\$0.0	-	-	-
	Hillrom Holdings, Inc.	Breathe Technologies, Inc.	\$130.0	\$10.0	-	13.0x	-
	Alphatec Holdings Inc.	EOS imaging SA	\$122.0	\$25.0	-	4.9x	-
	Stryker Corp	OrthoSpace Ltd	\$110.0	-	-	-	-
	Misonix, Inc.	Solsys Medical LLC	\$109.0	\$32.0	-	3.4x	-
	Edwards Lifesciences Corporation	CAS Medical Systems, Inc.	\$100.0	\$21.2	-	4.7x	-
Medical Services	Optum, Inc.	DaVita Medical Group	\$4,300.0	-	-	-	-
OTC/Consumer	STADA Arzneimittel AG	Select OTC and Non-Core Assets of Takeda Pharmaceutical Company Limited	\$660.0	\$300.0	-	2.2x	-
	Yellow Wood Parnters	The Dr. Scholl's Footware Unit of Bayer AG	\$585.0	\$234.0	-	2.5x	-
	Karo Pharma AB	Trimb Holding AB	\$366.0	-	-	-	-
	Clayton, Dubilier & Rice, LLC	The Cynosure medical aesthetics business of Hologic, Inc.	\$138.0	-	-	-	-

*Performance of Leading Healthcare Companies (as of 4/22/2020)*

Sector	Company	Market Cap (millions)	EV (millions)	EV/ EBITDA	EV/ SALES	52 WK Perf	Revenue (millions)	Gross Margin
Benefits	UnitedHealth	\$259,770	\$291,550	13.3x	1.2x	23.7%	\$246,270	24.1%
Biopharm	GlaxoSmithKline	\$100,890	\$139,710	10.1x	3.1x	3.4%	\$44,710	68.0%
	Merck & Co.	\$198,370	\$215,370	11.6x	4.6x	7.3%	\$46,840	71.9%
	Novartis	\$200,330	\$218,370	14.1x	4.5x	15.5%	\$48,680	71.3%
	Pfizer	\$197,610	\$241,520	11.5x	4.7x	-9.6%	\$51,750	80.7%
Devices	Becton, Dickinson and Co.	\$69,560	\$88,840	17.5x	5.1x	12.6%	\$17,360	47.8%
	Boston Scientific	\$49,040	\$59,180	21.0x	5.5x	-0.2%	\$10,730	71.1%
	Edwards Lifesciences	\$44,790	\$43,950	33.1x	10.1x	21.9%	\$4,350	74.4%
	Integra LifeSciences	\$4,000	\$5,300	14.3x	3.5x	-7.9%	\$1,520	64.5%
	Intuitive Surgical	\$57,920	\$54,690	33.6x	11.9x	-6.0%	\$4,600	69.0%
	Medtronic	\$130,810	\$145,930	15.3x	4.7x	15.9%	\$31,060	69.4%
	Stryker	\$67,060	\$74,110	17.8x	5.0x	-0.8%	\$14,880	65.9%
	Zimmer Biomet	\$23,180	\$31,070	13.2x	3.9x	-6.6%	\$7,980	71.8%
Diagnostics	Danaher Corporation	\$107,150	\$111,370	24.9x	6.2x	21.3%	\$17,910	55.7%
	Hologic	\$11,150	\$13,970	13.5x	4.1x	-2.4%	\$3,390	61.5%
	Quest Diagnostics	\$12,630	\$17,000	11.0x	2.2x	10.2%	\$7,730	35.3%
	Thermo Fisher	\$126,230	\$142,340	21.8x	5.6x	23.0%	\$25,540	44.4%
Distribution	Cardinal Health	\$14,080	\$20,790	7.6x	0.1x	4.9%	\$149,660	4.6%
	Henry Schein	\$7,430	\$9,240	10.1x	0.9x	-15.4%	\$9,990	31.0%
	McKesson	\$23,450	\$35,040	9.3x	0.2x	16.1%	\$224,940	5.3%
Diversified	Abbott	\$165,850	\$181,020	22.8x	5.6x	27.2%	\$32,090	58.5%
	Johnson & Johnson	\$394,610	\$403,310	14.1x	4.9x	8.8%	\$82,730	66.3%
Healthcare IT	Cerner	\$20,870	\$21,520	18.8x	3.8x	9.4%	\$5,690	81.2%
Services	Fresenius Medical Care	\$21,110	\$36,210	10.6x	1.9x	-8.2%	\$19,600	30.9%

**M&A Deal-by-Deal Analysis—Q1 2020 (announced or closed)**

*The information contained in the table below was derived from publicly available sources. Transaction analysis is inferential and not intended to be relied upon as pronouncements by the transaction participants or for any other reason. Transactions are pending or closed.*

Sector	Acquiring Party	Transferring Party	Analysis
Animal Health	<b>Destination Pet</b> , a provider of veterinary and pet resort services and a Letter1 Company.	<b>VitalPet</b> , a network of 24 animal hospitals.	Adds an additional 24 veterinary hospitals to Destination Pet's network. VitalPet's hospitals provide services such as veterinary medicine, overnight boarding, day care, grooming, and training. The company has ~420 employees. Terms not announced.
Animal Health	<b>Rarebreed Veterinary Partners</b> , a technology-enabled animal health company.	<b>Maine Veterinary Medical Center(MVMC)</b> , a specialty/referral hospital offering animal advanced medical care.	MVMC's medical care includes neurology, internal medicine, oncology, ophthalmology, surgery, rehabilitation, emergency care and critical care. The company employs 150 veterinary professionals, including 21 specialty doctors and has a 20,000-sf hospital. Terms not announced.
Biopharmaceuticals	<b>AcelRx Pharmaceuticals, Inc. (NASDAQ: ACRX)</b> , a \$2.4m specialty pharmaceutical company.	<b>TetraPhase Pharmaceuticals, Inc.</b> , a \$7.4m biopharmaceutical company focused on infection antibiotics.	TetraPhase's lead product is a tetracycline-based antibacterial for complicated intra-abdominal infections. The company is also developing a synthetic broad-spectrum fluorocycline for respiratory diseases, a synthetic fluorocycline derivative and a synthetic tetracycline for acute myeloid leukemia. Deal value - \$14.4m on sales of \$7.4m (1.9x) and negative EBITDA plus milestones based on sales.
Biopharmaceuticals	<b>ADVANZ PHARMA Corp. Limited (TSX:ADVZ)</b> , a UK-based \$508m specialty pharmaceutical company.	<b>Correvio Pharma Corp</b> , a Canada-based \$32m specialty pharmaceutical company focused on commercializing hospital drugs.	Provides ADVANZ with a presence in Germany, France, Spain, Italy, and the Benelux region and further diversifies ADVANZ's portfolio. Correvio develops and commercializes brands for the in-hospital, acute care market segment. Its key portfolio of marketed brands includes Aggrastat (tirofiban hydrochloride) for patients with acute coronary syndrome; and Brinavess (vernakalant IV) for the rapid conversion of recent onset atrial fibrillation to sinus rhythm. The company has commercial presence in over 60 countries. Deal value - \$76m on the sales of \$32.6m (2.3x) and negative EBITDA.

Sector	Acquiring Party	Transferring Party	Analysis
Biopharmaceuticals	<b>Axim Biotech , Inc. (OTCQB: AXIM)</b> , a \$680m international healthcare company targeting oncological and cannabinoid research.	<b>Sapphire Biotech, Inc.</b> , an oncology research and development company.	Extends Amix's research scope. Sapphire has licensed a leading compound, which inhibits and suppresses invasion in vitro and metastasis in vivo. The company is also developing a novel line of diagnostics for early cancer detection, response to treatment and recurrence monitoring. Terms not announced.
Biopharmaceuticals	<b>BioNTech SE (Nasdaq: BNTX, "BioNTech")</b> , a Germany-based biotechnology company focused on personalized cancer treatments.	<b>Neon Therapeutics, Inc.</b> , a clinical-stage biotechnology company developing neoantigen-based T cell therapies.	Strengthens BioNTech's position in T-cell therapies. Neon's focus is on neoantigen (immune targets generated by mutations inherent in tumors) therapies that have the potential to be both vaccines and T-cell therapeutics. Its most advanced program is a personalized neoantigen-targeted T-cell therapy, which is derived of multiple T-cell populations that target the most relevant neoantigens from each patient's cancer. Deal value - \$67m.
Biopharmaceuticals	<b>Conatus Pharmaceuticals Inc., (NASDAQ: CNAT)</b> , a \$28m drug development company focused on liver disease and oncology.	<b>Histogen Inc.</b> , a regenerative medicine company.	Histogen's lead product candidate is a minimally-invasive treatment to promote new hair growth in patients with male pattern hair loss. Histogen is also developing a human-derived collagen and extracellular matrix dermal filler, and an extracellular matrix scaffold for the treatment of articular cartilage defects. Deal value - \$100m.
Biopharmaceuticals	<b>Eli Lilly and Company (Lilly) (NYSE: LLY)</b> , a \$22.9b biopharmaceutical company.	<b>Dermira, Inc.</b> , a \$82.9m biopharmaceutical company focused on dermatologic diseases.	Expands Eli Lilly's immunology pipeline with a late-stage treatment for atopic dermatitis. Dermira develops a novel injectable humanized monoclonal antibody targeting interleukin 13 (a protein that in humans is encoded by the IL13 gene) that is in Phase IIb clinical trial for moderate-to-severe atopic dermatitis. Dermira also offers a topical once-daily anticholinergic cloth for primary axillary hyperhidrosis (uncontrolled excessive underarm sweating). Deal value - \$1.1b on sales of \$82.9m (13.2x) and negative EBITDA.

Sector	Acquiring Party	Transferring Party	Analysis
Biopharmaceuticals	<b>Novartis AG (NYSE: NVS)</b> , a \$54.9b Switzerland-based drug maker for ophthalmology, neuroscience, and critical care conditions.	<b>The Medicines Company</b> , a \$6m biopharmaceutical company focused ontherosclerotic cardiovascular disease.	The Medicines Company is developing an investigational RNA interference therapeutic that inhibits production of a protein in the liver which enhances the liver’s ability to remove low density lipoprotein cholesterol (LDL-C) from the bloodstream. The result would lower LDL-C levels (Higher LDL levels make people more likely to have a heart attack, other types of heart disease, a stroke, and peripheral vascular disease). The drug is the first and only cholesterol-lowering therapy in the siRNA (small-interfering RNA) class. In 2018, The Medicines Company sold its infectious disease business to Melinta Therapeutics for \$270m plus contingent payments. Novartis deal value - \$9.7b on sales of \$6m and negative EBITDA.
Biopharmaceuticals	<b>Takeda Pharmaceutical Company Limited (TSE:4502/NYSE:TAK)</b> , a \$29.5b Japan-based global biopharma company.	<b>PvP Biologics, Inc.</b> , a developer of an oral enzyme to treat celiac disease.	PvP is developing an oral computationally engineered glutenase, designed to degrade ingested gluten that in patients with celiac disease leads to inflammation and damage in the small intestine. Celiac disease is a genetically driven chronic immune-mediated disorder where abnormal immune responses to gluten peptides lead to inflammation and damage of the small intestine. The disease affects 3m+ people in the U.S. Currently, the only available treatment for patients with celiac disease is maintaining a gluten-free diet, which involves strict, lifelong avoidance of exposure to gluten proteins. Deal value - \$330m.
Data Management/ Healthcare IT	<b>Brainlab</b> , a Germany-based provider of software-driven medical technology for invasive medical treatments worldwide.	<b>VisionTree Software</b> , a patient-centric data collection and health management company.	Enhances Brainlab's cloud-based infrastructure for data collection and analysis to support post-treatment patient monitoring. Terms not announced.
Dental	<b>Align Technology Inc. (NSDQ:ALGN)</b> , a global manufacturer of 3D digital scanners and clear aligners used in orthodontics.	<b>Exocad Global Holdings GmbH</b> , a Germany-based dental software company.	Strengthens Align’s digital platform. Exocad develops computer-aided design and computer-aided manufacturing, or CAD/CAM, software to manage workflows in dental labs and dental practices. It will also bring ~ 200 digital dentistry partners and 35,000+ licenses installed worldwide. Deal value - \$376m.

Sector	Acquiring Party	Transferring Party	Analysis
Dental	<b>Lifco AB</b> , a Sweden-based investment company.	<b>Ronvig Dental Manufacturing AS</b> , a Denmark-based medical device maker and supplier of dental instruments.	Ronvig is a provider of dental devices and a maker of infection control instruments. It offers injection syringes, needlestick prevention, dust cabinet, rotating soft tissue trimmer, and others. The company has 17 employees. Deal value - \$4.6m.
Diagnostics	<b>Abcam Plc (LSE: ABC.L)</b> , a \$260m supplier of life science research tools for living cells analysis.	<b>Three business units of Expedeon AG (formerly Sygnis AG)</b> , a UK-based developer of genomics, proteomics and tools for molecular biology market.	Abcam is buying Expedeon Ltd., Innova Biosciences Ltd. and TGR BioSciences (Proteomics and Immunology business) from Expedeon. The deal accelerates Abcam's conjugation and assay capabilities. Expedeon offers protein electrophoresis products, protein fractionation products, protein quantitation instruments, sample preparation instruments, spectroscopy products, and nvoy polymer technology products. Innova Biosciences is a provider of bioconjugation technologies and services, offering antibody labeling kits, antibody purification kits, affinity resins, immunogen kits and others. TGR is an immunoassay technology company that develops drug discovery technologies and products for cell-based research applications. Deal value - \$133m on sales of \$13.1m (10.1x).
Diagnostics	<b>Abcam PLC</b> , a \$260m supplier of life science research tools for living cells analysis.	<b>Marker Gene Technologies Inc (MGTI)</b> , a provider of life science research tools.	MGTI's product portfolio includes assay kits, reporter assays, enzyme assays, biological probes, plant molecular biology, labeling reagents, molecular biology and cell biology products. It also offers DNA purification, gel electrophoresis and nucleic acid amplification. In January 2020, Abcam bought Applied StemCell's gene editing platform and oncology product portfolio. In 2019, Abcam acquired EdiGene's live cell line and lysates portfolio and Expedeon's immunology and proteomics business for \$130m. Terms not announced.
Diagnostics	<b>Curium Pharma LLC</b> , a radiopharmaceutical developer.	<b>Zevacor Molecular</b> , a developer of PET and SPECT radiopharmaceuticals for nuclear medicine and molecular imaging.	Complements Curium's cardiac positron emission tomography (PET) imaging and radiolabeling capability. Zevacor develops and makes PET and SPECT (single-photon emission computed tomography) radiopharmaceuticals used in nuclear medicine and molecular imaging. Terms not announced.

Sector	Acquiring Party	Transferring Party	Analysis
Diagnostics	<b>Exact Sciences (NASDAQ: EXAS)</b> , a \$454m molecular diagnostics company.	<b>Paradigm Diagnostics Inc.</b> , a cancer diagnostics company.	Complements Exact Sciences' cancer diagnostics technology. Paradigm develops a cancer diagnostic test which is used for biomarker analysis to provide genomic and proteomic information to help oncologist personalize patient's course of treatment. Terms not announced.
Diagnostics	<b>Exact Sciences (NASDAQ: EXAS)</b> , a \$454m molecular diagnostics company.	<b>Viomics</b> , a cancer diagnostic company.	Complements Exact Sciences' cancer diagnostics technology. Viomics develops a test for the detection of specific blood-borne markers generated by the body in response to cancers to enable early intervention. Terms not announced.
Diagnostics	<b>Maravai LifeSciences</b> , a provider of lifescience reagents and services.	<b>MockV Solutions</b> , a biotechnology company developing non-infectious viral clearance prediction products.	MockV develops non-infectious mock virus particles that mimic the properties of live infectious viruses used as spiking agents during viral clearance testing. The virus particles look and behave like viruses, but are non-infectious, allowing drug manufacturers to work with them inexpensively. Terms not announced.
Diagnostics	<b>Meridian Bioscience Inc (NASDAQ: VIVO)</b> , a \$197m provider of diagnostic testing products and life science raw materials.	<b>Exalenz Bioscience Ltd</b> , a \$14m developer of advanced medical systems for gastrointestinal tract and liver disorders.	Compliments Meridian's stool antigen tests. Exalenz's flagship product is a point-of-care urea breath test platform for the detection of <i>Helicobacter pylori</i> , often associated with peptic ulcers and gastric cancer. The system noninvasive sample collection for both adult and pediatric patients. It delivers immediate results with real-time patient monitoring in a physician office setting, while the lab system facilitates easy patient sample collection at the clinic or patient service center for analysis in the lab. Deal value - \$49.3m on sales of \$14m and negative EBITDA.
Diagnostics	<b>OncoCyte Corporation</b> , a molecular diagnostics company.	<b>Insight Genetics, Inc</b> , a molecular diagnostics company focused on lung and breast cancer.	Insight Genetics is developing a novel lung cancer immunotherapy test. The deal gives OncoCyte access to IG's existing pharma services infrastructure, which includes a CLIA-certified and CAP-accredited lab, and a menu of single-gene tests for various actionable biomarkers, including two emerging therapeutic targets, RET and NTRK. Deal value - \$12m in cash and stock.

Sector	Acquiring Party	Transferring Party	Analysis
Diagnosics	<b>P4 Diagnostix</b> , a network of nationally-recognized diagnostic testing laboratories and part of VitalAxis, Inc.	<b>Strand Diagnostix, LLC</b> , a developer of diagnostic and DNA testing services.	Strand Diagnostix provides services such as DNA testing, Y-marker analysis, rape kit analysis, forensic parentage testing, convicted offender database profiles, molecular analysis, and DNA specimen provenance assay. Terms not announced.
Diagnosics	<b>Quest Diagnostics, Inc. (NYSE: DGX)</b> , a \$7.6b provider of diagnostic testing and information services.	<b>Blueprint Genetics LLC</b> , a specialty genetic testing company focused on gene variant interpretation.	Expands Quest's rare disease offerings. Blueprint Genetics developed proprietary guideline-supported methods of gene variant interpretation of data generated from next generation sequencing, backed by high-touch consultative service. The company provides 3,900 targeted single gene and over 200 panel tests spanning 14 medical specialties. It is estimated that 7,000 rare diseases exist and over 30 million Americans have a rare disease (Source: National Institutes of Health). Terms not announced.
Diagnosics	<b>RadNet Inc. (NASDAQ: RDNT)</b> , a \$1.1b provider of outpatient diagnostic imaging services.	<b>DeepHealth, Inc.</b> , a radiology artificial intelligence (AI) company focused on mammography exams.	Expands RadNet's AI offerings. DeepHealth develops breast cancer detection "in machine learning" and AI software to assist radiologists and other clinicians in interpreting images and improving patient care. The company has focused on screening mammography, specifically 3D breast imaging. Deal value - \$1m, plus 1.5million shares in milestones.
Diagnosics	<b>Thermo Fisher Scientific, Inc (NYSE: TMO)</b> , a \$25.5b developer of diagnostic instruments, reagents, consumables and specialty laboratory products.	<b>QIAGEN N.V.</b> , a \$1.5b Netherlands-based molecular testing company.	Qiagen began shipping a rapid diagnostic test for COVID-19, which requires less than one minute for sample preparation and can deliver results in about one hour, to the United States in late March. Qiagen reported that Q1 revenues and EPS are expected to be significantly higher than previously issued guidance, primarily due to sales of products used in COVID-19 testing. The deal puts Thermo Fisher at the forefront of COVID testing and by extension infectious disease testing in general. The combined company will likely dominate the market. Qiagen provides sample and assay technologies for molecular diagnostics, applied testing, academic and pharmaceutical research. The company employs ~ 5,100 staffers at 35 sites in more than 25 countries. In March 2019, Thermo Fisher acquired Brammer Bio, a gene and cell therapy CDMO, for \$1.7b. Deal value - \$11.5b on sales of \$1.5b (7.6x) and EBITDA of \$228m (50.4x).

Sector	Acquiring Party	Transferring Party	Analysis
Distribution/Retail	<b>Medline Industries, Inc.</b> , a large privately-owned manufacturer and distributor of a broad array of healthcare products.	<b>Médi-Sélect Ltée</b> , a Canada-based medical and dental supplies distributor.	Gives Medline Canada top market share in the Quebec market. Médi-Sélect distributes instruments and supplies for medical, dental, podiatric and esthetic markets. This is Medline's second acquisition in Quebec since 2018, a sign of the company's increasing dedication investment and growth in the Canadian market. Terms not announced.
Medical Devices	<b>Alphatec Holdings Inc. (NSDQ:A TEC)</b> , a \$106m developer of devices for spine disorders.	<b>EOS imaging SA</b> , a France-based developer of orthopedic imaging systems.	EOS Imaging develops rapid, low dose, biplanar, full-body imaging systems and 3D modeling. The system captures a calibrated, full-body image in a standing position, offering precise measurement of anatomical angles and dimensions. The resulting imaging drives a more accurate understanding of patient alignment during diagnosis, elevates the likelihood of surgical goal fulfillment by integrating a fully informed plan into surgery, and enables a post-operative assessment against the original surgical plan. Deal value - \$122m on sales of \$25m (4.9x) and negative EBITDA.
Medical Devices	<b>Anika Therapeutics, Inc. (NASDAQ: ANIK)</b> , a \$111m joint preservation and regenerative therapies company.	<b>Arthrosurface Inc.</b> , a provider of joint surface and preservation products and a subsidiary of STD Med Inc.	Arthrosurface offers microfracture systems, knee implants, shoulder implants, wrist implants, toe implants, ankle implants, hammer toe systems, bunion systems, hemi caps, and other biologic systems. Its products serve patients suffering with joint disease and cartilage damage who have failed early treatment therapies such as physiotherapy, pain and anti-inflammatory medications, bracing, arthroscopy and other grafting procedures. Deal value - \$60m on sales of ~\$28m (2.1x) plus \$40m in the milestones.
Medical Devices	<b>Anika Therapeutics, Inc.</b> , a \$111m joint preservation and regenerative therapies company	<b>Parcus Medical</b> , a maker of invasive sports medicine arthroscopy products for the ambulatory surgery center market.	Expands Anika's offerings into ambulatory surgical center (ASC) market. Parcus offers suture anchors, interference screws and ACL graft fixation accessories and instruments for orthopedic procedures. Deal value - \$35m on sales of \$12m (2.9x) plus \$60m in milestones.

Sector	Acquiring Party	Transferring Party	Analysis
Medical Devices	<b>Bactiguard Holding AB</b> , a Sweden-based manufacturer of infection protection products and antibiotics.	<b>Vigilenz Medical Devices and Vigilenz Medical Supplies (together Vigilenz)</b> , a Malaysia-based maker of wound management products.	Strengthens Bactiguard's position in infection control and wound management. Vigilenz offers surgical sutures, mesh, wound wash and dressings, to orthopedic trauma implants. Its key product is a wound-wash for acute and chronic wounds, which is CE-marked and has been registered by the US FDA. Bactiguard partnered with Vigilenz in 2015 in developing Bactiguard-coated orthopedic trauma implants. Deal value - \$4.5m on sales of \$4.4m (1.02x) and EBITDA of \$0.62 (7.3x) plus \$2m in milestones.
Medical Devices	<b>C.R. Bard Inc</b> , a maker of medical, surgical, diagnostic, and patient care devices and a division of Becton Dickinson (BD).	<b>LifeBond Ltd</b> , an Israel-based developer of hernia mesh.	LifeBond develops devices for bio-surgery and tissue repair. The company offers lifeseal surgical sealant and lifemesh self-fixating mesh. Its lifeseal surgical sealant offers staple line reinforcement in bariatric and gastrointestinal procedures including low anterior resection anastomoses. Like other hernia mesh makers, Bard has faced thousands of product liability lawsuits for previously commercialized mesh. Deal value - \$60m.
Medical Devices	<b>Catalent, Inc. (NYSE: CTLT)</b> , a \$2.46b provider of delivery technologies for drugs, biologics, and consumer and animal health products.	<b>MaSTherCell Global, Inc.</b> , a Belgium-based technology-focused cell and gene therapy contract development and manufacturing organization.	Complements Catalent's gene therapy offerings. MaSTherCell provides autologous and allogeneic cell therapies, as well as related analytical services. Its offers therapies based on chimeric antibody receptor-engineered T cells, T cell receptors, tumor-infiltrating lymphocytes, and mesenchymal stem cells. The company has a 25,000 sf facility in Belgium and a 60,000 sf adjacent facility currently under construction. Deal value - \$315m.
Medical Devices	<b>Dover Corporation (NYSE: DOV)</b> , a \$7.14b provider of engineered systems, fluids, and refrigeration & food equipment.	<b>Em-tec GmbH</b> , a Germany-based manufacturer of flow measurement devices for medical and biopharmaceutical markets.	Em-tec has pioneered non-invasive flow measurement using the ultrasound transit-time principle and its devices have demonstrated the ability to deliver superior measurement results relative to competing offerings. Em-tec's flow measurement equipment used in connection with cardiac, vascular and transplant surgery, dialysis, automated bioprocess monitoring, and laboratory and industrial processes. Terms not disclosed.

Sector	Acquiring Party	Transferring Party	Analysis
Medical Devices	<b>EmCyte Corporation</b> , a developer of devices for platelet rich plasma and progenitor stem cell biologics.	<b>Cellmedix Holdings</b> , a developer of blood analysis products.	Strengthens the biologics intellectual property portfolio of Emcyte. The key product of Cellmedix a single-use, sterile kit consisting of blood draw components, syringes, and a concentrating device. It concentrates blood components and aids in separation of the blood components by density. The system is intended to be used for the preparation of autologous platelet-rich plasma (PRP) from sample of peripheral blood from patient. Plasma based therapies have a role in addressing infectious disease including COVID-19. Terms not announced.
Medical Devices	<b>Essity AB</b> , a \$13b Sweden-based hygiene and health company.	<b>75% stake in ABIGO Medical AB</b> , a Sweden-based provider of pharmaceuticals, wound-care products and ENT treatments.	ABIGO manufactures and markets OTC and prescription pharmaceuticals. It also offers woundcare, fungus treatments and ENT products. The company has ~170 employees and reported \$41.8m of 2019 net sales. ABIGO is currently a key partner and sub-supplier to Essity. Terms not announced.
Medical Devices	<b>Getinge AB (STO:GETIB)</b> , a \$2.5b Sweden-based maker of medical equipment and instruments.	<b>Applikon Biotechnology BV</b> , a Netherlands-based developer and supplier of bioreactor systems for vaccine and antibody development.	Applikon specializes in advanced bioreactor systems for the research and production of vaccines and antibodies, as well as enzymes and bio-plastics for industrial biotechnology. Bioreactors can often carry out several or even tens of parallel culture process at the same time, and therefore have certain high-flux characteristics. Given the COVID crisis, this market is expected to expand significantly. Applikon also offers process control systems, sensors and analyzers. The company has ~180 employees worldwide. Deal value - \$87.9m on sales of \$47.11m (1.8x) plus \$65.95m in milestones.
Medical Devices	<b>Haemonetics Corp (NYSE:HAE)</b> , a \$967m medical technology company focused on delivering hematology products.	<b>The hemostasis analyzer system IP from CoraMed Technologies, LLC.</b> , a provider of measuring systems for all phases of haemostasis.	Haemonetics acquired ownership of IP previously licensed from CoraMed. The system is comprised of an analyzer, disposable cartridges and software, and provides rapid, comprehensive and accurate identification of a patient's hemostasis condition. Terms not announced.

Sector	Acquiring Party	Transferring Party	Analysis
Medical Devices	<b>Halma plc (LON:HLMA)</b> , a \$1.3b UK-based maker of medical, process, infrastructure, environmental and analytic products.	<b>Maxtec, LLC</b> , a maker of respiratory products for hospital acute care units and non-medical industries.	Complements Halma's Perma Pure unit, which makes products for medical moisture management to support heart and respiratory conditions. Maxtec specializes in products for respiratory care, including in oxygen sensors and analyzers for hospital acute care units. Deal value - \$20m on sales of \$20.4m (1.0x).
Medical Devices	<b>Halma, plc. (LON:HLMA)</b> , a \$1.3b UK-based maker of medical, process, infrastructure, environmental and analytic products.	<b>NovaBone Products, LLC</b> , a manufacturer of synthetic bone graft products.	NovaBone provides regenerative biologics, bone graft substitutes and collagen matrix devices, including bone grafting material, bio-active glass scaffolds and versatile bone graft substitutes. Its products are used to accelerate bone regeneration, primarily for orthopedic and dental surgical procedures. Deal value - \$97m on EBITDA of \$11m (8.8x) plus \$40m in milestones.
Medical Devices	<b>Heraeus Medical Components, LLC</b> , a provider of medical component manufacturing services and a unit of Heraeus Holding GmbH.	<b>Contract Medical International (CMI) GmbH</b> , a Germany-based contract manufacturer for minimally invasive medical devices.	Extends Heraeus' interventional device capabilities. CMI focuses on complex delivery systems for minimally-invasive medical devices. The company provides contract design, development, manufacturing and global regulatory services for medical device OEMs. It has advanced capabilities in design specification for balloons, stents, and coiled or braided shaft technologies for sheaths and catheters. Terms not announced.
Medical Devices	<b>Integer Holdings NYSE:ITGR</b> , a \$1.24b OEM maker of cardiac, neuromodulation, and orthopedic products.	<b>Inomec Ltd.</b> , an Israel-based manufacturer of catheter and minimally invasive technologies.	Strengthens Integer's R&D pipeline, adds catheter design, clinical, and pilot manufacturing capabilities and expands Integer's global footprint. In October 2019, Integer acquired certain assets of US BioDesign, a maker of complex braided biomedical structures for disposable and implantable medical devices to reinforce its medical technologies. Terms not announced.
Medical Devices	<b>Intuitive Surgical Inc. (Nasdaq:ISRG)</b> , a \$4.5b developer of robotic-assisted minimally invasive surgery procedures.	<b>Orpheus Medical, Inc</b> , a provider of clinical video and imaging documentation platforms.	Expands Intuitive's integrated informatics platform. Orpheus developed a platform for clinical video management and analytics for hospitals. The platform captures and shares clinical video and imaging from many sources, helping improve physician and OR care team workflow and enabling analysis of their interventions. Terms not announced.

Sector	Acquiring Party	Transferring Party	Analysis
Medical Devices	<b>Kaman Corp (NYSE:KAMN)</b> , a maker of advanced technology products, helicopters and other aerospace products.	<b>Bal Seal Engineering, Inc.</b> , an OEM manufacturer of industrial and medical components.	Bal Seal provides custom-engineered sealing, connecting, conducting, and EMI/RFI shielding components and services for medical device companies. Bal Seal has 600+ employees and a 155,000 sq facility in Texas. Terms not announced.
Medical Devices	<b>Masimo Corporation (NSDQ:MASI)</b> , a \$937m medtech company focused on noninvasive monitoring technologies.	<b>The connected care business of NantHealth, Inc.</b> , a \$94.6m healthcare technology company focused on converging science and integrated clinical platforms.	Complements Masimo's existing offerings. The transferred business includes patient vitals software, connectivity hubs, and interface cables. The portfolio provides medical device interoperability to hospitals and health systems, enabling streamlined collection and storage of medical device data through a vendor-agnostic platform into the HER (electronic health record) or other clinical information systems. Deal value - \$47.25m.
Medical Devices	<b>Masimo Corporation (NSDQ:MASI)</b> , a \$937m medtech company focused on noninvasive monitoring technologies.	<b>TNI Medical AG</b> , a Germany-based medical ventilation company.	TNI develops medical ventilations, which provide high-flow, warmed and humidified respiratory gases to spontaneously breathing patients with serious pulmonary conditions. The system can be used both in the hospital and at home. The technology has applicability in addressing COVID-19. Terms not announced.
Medical Devices	<b>Medtronic plc (NYSE:MDT)</b> , a \$30.6b manufacturer of cardiovascular, orthopedic, spinal and other medical devices.	<b>Digital Surgery Ltd</b> , a UK-based provider of data analytics, artificial intelligence (AI) and training programs for the operating room.	Strengthens Medtronic's robot-assisted surgical platform. Digital Surgery's main products are an interactive training platform downloaded more than 2 million times, and an operating room efficiency platform, which uses AI to automatically recognize and blur out images that could be used to identify patients or staff. In September 2019, Medtronic unveiled its modular soft-tissue robotic surgery system. In February 2020, Intuitive Surgical also announced to acquire Orpheus Medical, an Israel-based a provider of clinical video and imaging documentation platforms. Its system records video from scope cameras and external monitors, including from Intuitive's da Vinci system. Terms not announced.

Sector	Acquiring Party	Transferring Party	Analysis
Medical Devices	<b>Medtronic plc (NYSE: MDT)</b> , a \$30.6b manufacturer of cardiovascular, orthopedic, spinal and other medical devices.	<b>Stimgenics</b> , a spinal cord stimulation company to manage pain.	Completements Medtronic's chronic pain therapies. Stimgenics has developed a spinal cord stimulation waveform known as Differential Target Multiplexed (DTM) Spinal Cord Stimulation. Clinical evidence and preclinical research on a neuronal-glial mechanism of action supports the validity of the DTM therapy. Terms not announced.
Medical Devices	<b>MicroSurgical Technology (MST), Inc</b> , a manufacturer of ophthalmic surgical product and a Halma company.	<b>"Volk Eye Check" IP and assets of IRISS Medical Technologies Ltd</b> , a UK-based developer of diagnostic-assistance devices in ophthalmics and eye data analytics.	The Volk Eye Check is a handheld ocular measurement device that measures and analyzes parameters used to screen and document ocular characteristics such as pupil diameter, horizontal visible iris diameter, interpupillary distance, pupil eccentricity, and strabismus angle, for contact lens fitting, eyelid surgery, and general diagnostic purposes. Terms not announced.
Medical Devices	<b>Montagu Private Equity</b> , A leading Europe-based private equity firm.	<b>The OEM business of RTI Surgical Holdings</b> , a biologics and surgical implant business.	Represents a new growth platform for Montagu, which will give the OEM business more attention and resources than RTI. RTI's OEM business develops and manufactures biologic, metal and synthetic implants used in a variety of surgical procedures including orthopedic, spine, sports medicine, general surgery and trauma. With the divestiture, RTI Surgical plans to focus on growth and innovation as a global pure-play spine business. Proceeds will be to pay down debt and increase investment in the global spine portfolio. The spine business generated revenues ~120m with gross margins of ~ 75% in 2019. The sale completes the first phase of RTI's strategic transformation to reduce complexity, drive operational excellence and accelerate the growth. This is Montagu's second carve-out transaction four months. It recently completed its acquisition of Jane's Group from IHS Markit in December 2019. Deal Value --\$490m on sales of ~\$120m (4.15x).
Medical Devices	<b>MXR Imaging, Inc</b> , a maker of diagnostic imaging equipment.	<b>OI Healthcare business of Oxford Instruments plc</b> , a UK-based provider of high technology products, systems and tools for healthcare, energy and aerospace industries.	The OI Healthcare business sells, services and rents third-party magnetic resonance imaging and computer tomography machines. Deal value - \$15m.

Sector	Acquiring Party	Transferring Party	Analysis
Medical Devices	<b>Orthofix Medical Inc. (NSDQ:OFIX)</b> , a \$459m maker of musculoskeletal healing products and therapies.	<b>The fitbone limb lengthening system of Wittenstein SE</b> , a Germany-based contract manufacturer focused on robotics, machine tools and medical technology.	Wittenstein developed an intramedullary lengthening system for limb lengthening of the femur and tibia bones. There are other potential applications in preliminary development including one for early onset scoliosis. Deal Value: \$18m plus a supply manufacturing agreement.
Medical Devices	<b>SHI Medical AG</b> , a Switzerland-based provider of drug delivery products.	<b>Weibel CDS AG</b> , a Switzerland-based provider of drug delivery products and packaging services.	Expands SHI's injection portfolio. Weibel develops injection systems and devices, packaging technologies and delivery systems for parenteral drugs for home, point-of-care, and clinical use. The company offers supercap syringe, cartridge-based patch injectors, reconstryringe and drug delivery systems. Terms not announced.
Medical Devices	<b>Smith &amp; Nephew plc (LSE:SN, NYSE:SNN)</b> , a \$4.9b maker of orthopedic, wound management, sports medicine and trauma & extremities products.	<b>Tusker Medical, Inc.</b> , a development-stage medical device company focused on technology to ear, nose, and throat surgery.	Complements Smith & Nephew's ENT portfolio. Tusker Medical develops an in-office ear tube delivery system to treat recurrent or persistent ear infections. Tusker's iontophoresis system, applies a low level electrical current that delivers a local anesthetic into eardrum before tube insertion to accelerate tissue uptake of the ionic drug. Terms not announced.
Medical Devices	<b>Symmetry Surgical Inc</b> , a provider of surgical instrumentation and a unit of Roundtable Healthcare Partners.	<b>The O.R. Company</b> , a manufacturer of niche surgical devices for minimally invasive and open surgery.	Complements Symmetry's medical instruments portfolio and enhances its minimally invasive surgical instrument offerings in laparoscopy and gynecological procedures. The O.R. company provides uterine manipulation, trans-vaginal access, scope management, sterile field management, minimal invasive surgery, and insufflation consumables in laparoscopic gynecological specialties. Terms not announced.

Sector	Acquiring Party	Transferring Party	Analysis
Medical Devices	<b>SymphonyAI Group</b> , an operating group of B2B AI companies.	<b>TeraRecon Inc</b> , a medical imaging equipment developer focused on advanced visualization and AI.	TeraRecon's lead product is an enterprise-wide image management and visualization platform. It supports tools for neuroimaging analysis and research, volumetric cardiac and coronary imaging, oncology and clinical research, and vascular and interventional planning. TeraRecon also provides a cloud computing visualization product; a multi-modality medical viewer, and a platform that allows users to share images and find across the web in real-time. TeraRecon has operations in Japan, the US, and Germany. Terms not announced.
Medical Devices	<b>TE Connectivity Ltd. (NYSE: TEL)</b> , a \$13.6b Switzerland-based connectivity and sensor manufacturer.	<b>71.87% shares of First Sensor AG</b> , a \$174m Germany-based developer of optoelectronic sensors.	First Sensor develops standard sensors and customer-specific sensors for the industrial, medical and transportation markets. It has six German locations along with development, production and sales sites in the US, Canada, China, the Netherlands, Great Britain, France, Sweden and Denmark. Terms not announced.
Medical Devices	<b>Teleflex Medical OEM</b> , a \$1.9b manufacturer of disposable vascular access products and diagnostics.	<b>IWG High Performance Conductors (HPC)</b> , an OEM medical tubing and wire components manufacturer.	HPC manufactures low-friction PD-Slick liners, hybrid tubing, micro-diameter wire and tubing, and conductor-embedded tubing. It also produces copper and copper alloy conductors, and high-tensile strength alloys for use in microelectronics and specialty instrumentation. Terms not announced.
Medical Services	<b>ICON plc (NASDAQ: ICLR)</b> , a \$2.7b Ireland-based provider of outsourced pharmaceutical and medical device development services.	<b>MedPass International</b> , a France-based medical device CRO, regulatory and reimbursement consultancy.	MedPass specializes in the regulation and clinical development of new medical technologies. It provides customized regulatory/reimbursement consulting and CRO services to medical device manufacturers seeking to place and maintain their products on the European market. Terms not announced.
Medical Services	<b>L2P Research LLC</b> , a preclinical contract research organization (CRO).	<b>METIS Research Laboratories</b> , a provider of radiotracer services for pharma, biotech, and academic organizations.	METIS employs radiometric analysis of lead compounds. Its services include radioligand binding assays, receptor occupancy determinations, autoradiography, Quantitative Whole-Body autoradiography, small animal imaging and custom radiolabeling & synthesis. Terms not announced.

Sector	Acquiring Party	Transferring Party	Analysis
Medical Services	<b>Nexelis (formerly PAIRimmune Inc)</b> , a provider of assay development and advanced laboratory testing,	<b>ImmunXperts SA</b> , a Belgium-based CRO focused on bioassays with human immune system.	A bolt-on for Nexellis, a portfolio company of Ampersand Capital Partners. ImmunXperts offers immunogenicity and immuno-oncology in vitro functional and potency assays, clinical immunogenicity monitoring, regulatory support, training and consultancy -- all synergistic with Nexelis. Terms not announced.
Medical Services	<b>The InterMed Group</b> , a provider of integrated health technology management services and a Granite Bridge Partners company.	<b>Sigma Imaging Technologies, Inc.</b> , a provider of imaging system services.	Sigma's core services include preventive and corrective maintenance, MRI magnet services, and part repair. The company also provides MRI/CT/PET systems and offers services such as equipment evaluation, refurbishment, installation, removal, relocation and storage. Terms not announced.
Medical Services	<b>Veristat, LLC.</b> , a full-service CRO.	<b>The Clinical Trial Company Ltd. (TCTC Group)</b> , a UK-based global CRO.	TCTC Group provides clinical operations, regulatory, personnel and medical services for full-service clinical studies and stand-alone clinical trials for biopharmaceutical companies. Terms not announced.
OTC/Consumer	<b>CVS Pharmacy, Inc.</b> , a distributor of pharmaceutical products and a subsidiary of CVS Health.	<b>The retail and specialty pharmacy businesses of Schnuck Markets Inc</b> , a provider of retail food and other consumer products.	The transferred business includes 99 of the grocer's pharmacies, which will be branded as CVS Pharmacy. Additionally, CVS Pharmacy will acquire the prescription files from 11 Schnucks pharmacies. Terms not announced.

The Walden Group is a healthcare mergers & acquisition advisory firm. We represent privately-owned companies seeking to divest operations or find a home within (or relationship with) an appropriate strategic or private equity firm. We also represent operating companies and financial sponsors seeking to make corporate acquisitions and investments in the healthcare sector. Our approach is "full-immersion", with more than 30 years of healthcare experience, deep industry knowledge, a worldwide network of close relationships and a lengthy track record of completed transactions.

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