Insights & Implications from the J.P. Morgan Healthcare Conference

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Artificial intelligence to analyze patient records. 3D visualization to help surgeons operate. Drones to bring emergency care. Blockchain to help secure patient data.

How technology is transforming healthcare was among the exciting developments explored at the 36th annual J.P. Morgan Healthcare Conference.

Each year, we connect the brightest minds and keenest investors who are focused on extending the boundaries of healthcare and how we can enhance and prolong life. Nearly 10,000 participants and over 450 public, private and not-for-profit companies at the forefront of innovation attended this year's gathering.

The Conference reflects the passion we share with our clients for this industry. We hope you enjoy this summary report of insights, views and trends from the Conference, and we look forward to our next conversation.

Fundamental changes: Key trends at play

A pronounced upbeat tone marked this year's Healthcare Conference and further reinforced the key trends we had observed in prior months: vertical integration and big data, analytics and artificial intelligence as a single disruptive force.

The trend of vertical integration—where companies seek to gain greater control over the entire ecosystem—moved forward boldly in recent months with three major transactions announced: CVS/Aetna; UnitedHealth Group/DaVita Medical Group; and Humana Consortium/Kindred. While these may take years to fundamentally alter our personal healthcare experience, they show promise in reducing the cost of healthcare in the United States and changing the industry's competitive dynamics. It seems likely that, in a few years, many of us will get care from providers that are employed by our health insurer and that the coordination among those providers will be enhanced.

INFILTRATION OF TECHNOLOGY

The consideration of big data, analytics and artificial intelligence as a disruptive force in healthcare has intensified. Although there hasn't yet been a material impact to the delivery system, expectations remain that technology companies will improve:

- Pharmaceutical supply chain for consumers
- Medical products supply chain for businesses
- In-home delivery of care through internet-enabled devices

The technology largely exists, but the commercial opportunity has yet to be realized. As we all know, there are many different stakeholders in healthcare (government, employers, insurance companies, patients and providers), and therefore the healthcare system doesn't always behave like a traditional consumer industry. There are as yet no proven business models, and a go-to-market strategy hasn't yet been figured out. However, we know it is only a matter of time before these technology applications have a viable commercial opportunity.

The amount of innovation in healthcare continues to be awe inspiring, and we expect these trends to drive increased M&A activity over the coming months. What makes this industry unique is that it is highly collaborative, with private enterprises dedicated to helping people. I see this spirit of collaboration reflected in the Conference year after year, and 2018 was no exception.

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Life sciences: Accelerating opportunities

Peter Meath
Life Sciences Industry Head for Middle Market Banking & Specialized Industries
J.P. Morgan Commercial Banking

This year's Conference confirmed three major trends we are seeing across the life sciences industry—themes that were part of both formal and informal discussions. These trends—the blending of tech and healthcare, tax reform and greater activity related to Asia—will likely pick up the pace of public/private partnerships and accelerate M&A activity across the sector.

Front and center is the blurring of the lines between technology and healthcare. Recent tech innovations, such as the digital pill and gene editing, are making it much harder to tell where the IT/software arena ends and where the healthcare domain begins. In addition, digital imaging, genetics, apps and artificial intelligence are enhancing traditional diagnostic tools such as X-rays, CT scans and MRIs. The prospect of artificial intelligence has significant implications for drug discovery and clinical trials in particular.

EMERGING TRENDS

The overlap of technology and healthcare is opening up some of the most exciting opportunities of the decade. We are seeing medical technology and software companies partnering to revolutionize the design of operating rooms, among other transformations. We expect to see an acceleration in these kinds of collaborations over the next few years.

On the drug discovery and development front, leading drug companies are turning to artificial intelligence. Medical device companies are increasingly incorporating software platforms and SaaS backbones to their devices to gather and utilize data. These software streams can be monetized and used for better clinical outcomes, but questions remain about who will pay for the increased capabilities and data—and who will own the information.

GENE EDITING EVOLVING

While the role of artificial intelligence is definitely in nascent stages and remains to be proven, the potential seems to be worth exploration. The main questions center on what is the best way to integrate, what is the right combination of software and lab, and how to blend expertise from the tech space and traditional drug discovery.

For several years now, gene editing technology has focused on CRISPR, which uses the body's natural defense system to

> "We can accelerate this global progress. The goal is getting medicine to those who need it. That requires innovation in medicine and the funding to deliver it."
>
> **Bill Gates**
> Co-Chair and Trustee
> Bill & Melinda Gates Foundation

correct genetic abnormalities. While promising, the process has encountered challenges, which are to be expected, given the early nature of this technology. Teams at various universities are developing even more precise processes to address some of these early challenges. With both tremendous promise and risks, gene editing technology will likely remain at the forefront of innovation—and investment.

U.S. TAX CHANGES EXPECTED TO SPUR M&A

The overriding sentiment at the Conference was that the recent U.S. corporate tax cut and repatriation of funds benefit will spur M&A activity in the near term, particularly in pharma and biotech.

What these new entities will invest in and why—whether pipeline, top-line growth or new technologies—is all TBD, but we can expect an uptick at least in the short term.

The U.S. tax code revamp brought other important changes. Most notably, the bill eliminates the corporate AMT, which had prevented companies from using the R&D credit. The change doesn't affect smaller companies, which never had significant exposure to the AMT.

Biotech companies focusing on orphan diseases will be negatively impacted by the tax bill, as they will be required to pay more of the R&D costs associated with the development of these drugs affecting serious but small patient populations. Some estimates state that a sizable percentage of these drugs will, as a result, not be developed in many pipelines.

> “The overlap of technology and healthcare is opening up some of the most exciting opportunities of the decade.”

More unexpectedly, there is no elimination of the medical device tax. The device industry is lobbying hard for preventative action, but if it is not successful, this could hurt innovation and investment in the space.

These tax revisions are taking place during a time of continued evolution and uncertainty in the regulatory landscape. While the U.S. Congress did not pass a comprehensive national health reform bill in 2017, other legislative reforms are in motion that could impact the healthcare industry, including changes to the Affordable Care Act (ACA).

The top concerns include potential rising healthcare costs, but where and how these increases hit hardest—in delivery of care or cost of care—remains to be seen. We will be watching the medtech world in particular, where bipartisan legislation can penalize or improve the development of new medical devices.

ASIA IN THE SPOTLIGHT

There was a noticeable increase in participation and activity by both Asian investors and companies at this year's Conference. While the Asia market has always held great potential for investors, we are seeing an uptick in the number of Asian companies looking for direct and other investment opportunities stateside. Asian partners and investors are plainly lobbying for more collaboration on entrance into the Asian markets. Asia—and China in particular—is an increasingly viable source for capital and opportunity, which seem to be expanding at a rapid pace.

THE SECTOR TO WATCH

As technology continues to infuse the life sciences industry with innovative new approaches, an ongoing challenge will be how to bring these new therapies to market while maintaining the system's overall safety. The U.S. Department of Defense, which spends millions of dollars annually, may be advocating for control of the decision of who participates in trials; not involving U.S. Food and Drug Administration (FDA) scientists and experts might heighten the risk of trials and drugs going awry, which could have a negative impact on the overall sector.

The potential growth in life sciences remains exciting and makes this the sector to watch. The challenges and opportunities will only grow as our population ages across the globe and the need for medications and therapies increases.

Healthcare: A sector primed for action

Angela Colombani
Investment Specialist
J.P. Morgan Private Bank

Nadia Lovell
U.S. Equity Strategist
J.P. Morgan Private Bank

A conversation with Nadia Lovell, U.S. Equity Strategist, and Angela Colombani, Investment Specialist, J.P. Morgan Private Bank.

COLOMBANI: The U.S. healthcare sector was one of the best-performing sectors in 2017. What's your view of the sector for 2018?

LOVELL: Despite the solid outperformance of the sector in 2017 (healthcare delivered a +22.1% total return, besting the S&P 500's +21.8%), we remain constructive in 2018, with a preference toward biopharma and managed care, particularly category leaders and those with differentiated products and services. Supporting our view are strong secular demographic trends, accelerating drug approvals, robust innovation, balance sheet flexibility and attractive valuations. That said, we will be closely watching the midterm elections as political rhetoric—particularly around drug pricing and the Affordable Care Act (ACA)—could pick up, again causing volatility. But note with drug prices, companies have become more disciplined and self-regulating.

COLOMBANI: How's innovation in the sector?

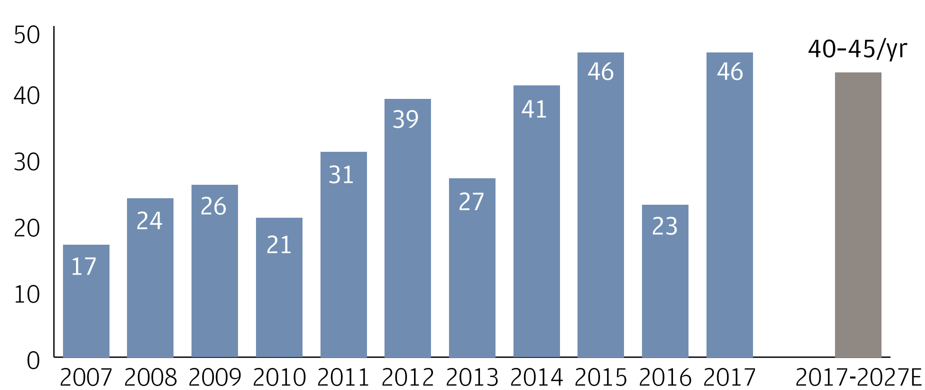
LOVELL: Innovation remains in full swing across myriad therapeutic areas, including immuno-oncology, gene therapy, cystic fibrosis, migraine, structural heart and robotics. We entered the next frontier in medical innovation last year, with the U.S. Food and Drug Administration (FDA) approving the first gene therapy. The FDA has become more accommodating under new leadership, expediting the approval process, especially for breakthrough therapies. In 2017, the FDA approved 46 new molecular entities versus just 23 in 2016 (see chart). Many of these newly approved drugs have blockbuster potential (>$1 billion in sales annually).

> "We expect not only to see an increase in small and mid-sized M&A deals, but also a reemergence of megamergers."

COLOMBANI: Tax reform was recently passed. What are the implications for the healthcare sector?

LOVELL: The benefits to the healthcare sector from the federal corporate statutory tax rate being cut to 21% is relatively minimal, given that the sector is already among the lowest effective tax rate payers in the S&P 500 (26% versus S&P 500's 28%). However, the sector is one of the biggest beneficiaries of cash repatriation, as it has the second highest overseas cash balance (~$200 billion) in the S&P 500. We expect that most of the foreign cash will be repatriated for capital deployment—via share buybacks, dividends and M&A, which holds implications for clients who are founders, private investors or executives in this space.

FDA Innovative Product Approvals



Source: FDA, Bloomberg, Quintiles IMS, FDA, J.P. Morgan IB. Data as of December 2017.

COLOMBANI: M&A activity has been relatively slow over the last couple of years. Do you think it'll pick up in 2018?

LOVELL: Yes, we expect not only to see an increase in small and mid-sized M&A deals, but also a reemergence of mega-mergers—the last wave was in 2009. The stage is primed for it: We are late in the business expansion cycle; companies—particularly large biopharma—need to rebuild drug pipelines; and the ability to repatriate foreign cash at a lower tax rate is a game changer, in our view.

COLOMBANI: The S&P 500 has run a lot and valuation looks a bit stretched. How is valuation looking in healthcare?

LOVELL: There are parts of healthcare—like more defensive subsectors such as medtech and managed care—where valuation is a bit demanding but justified, given solid growth and secular tailwinds. In aggregate, the sector is trading at 17.5x forward price-to-earnings—a ~6% discount to its own historical average and ~10% discount to the S&P 500 (versus historical 8% premium). This traditionally defensive sector is also trading at a steep discount to another, consumer staples—a ~10% discount (versus historical 4% discount).

> "We should all be putting 100% of our effort behind dealing with a disease that affects almost every family."

Joe Biden
Former Vice President of the United States
Chair, Cancer Moonshot Task Force

M&A in 2018: Ready when opportunity knocks

Steve Faulkner
Head of Private Business Advisory
J.P. Morgan Private Bank

The healthcare and life sciences industry is anything but quiet. The business lifecycle continues to accelerate, creating both pressure and disruption for business owners and managers alike. Increasing M&A activity; changes to the supply chain with vertical alliances such as CVS-Aetna; encroachment by Amazon and other tech giants; and evolving innovations that include personalized medicine, new devices and ever more targeted drugs are all driving one of the most exciting periods in the industry.

These trends are also driving opportunities. Owners and managers can expect calls from interested parties looking to grow and innovate through acquisition, partnership or joint-venture arrangements. The latest tax changes could result in repatriated capital or increased cash flow that will further boost activity. In addition, increased growth in VC fundraising can potentially mean better capital raises with more flexible terms and lower dilution.

THREE FACTORS FOR SUCCESS

In this turbocharged environment, it's important to stay focused on what you know and seek guidance for what you don't. We continually observe that business owners completing the most successful M&A transactions do three things right:

1. Vigorously prepare their businesses to go to market
2. Have a clear conviction to sell
3. Move expeditiously to get a deal done

It's not easy to stay focused on the growth of your business while preparing for a transition. And that's where another critical factor comes into play: elevating the caliber of your team, both inside and outside the business.

> "In this turbocharged environment, it's important to stay focused on what you know and seek guidance for what you don't."

INVESTING IN YOUR BUSINESS

Many nascent healthcare companies rely on an internal bookkeeper or an external accountant for financial recordkeeping, and only bring in a controller or chief financial officer when they are preparing to go to market. The delay may be shortsighted and more costly than the associated compensation expense.

Having a dedicated resource to prepare your planning, budgeting and forecasting can help you understand the quality of your earnings and deploy precious capital in a way that continues to build value. In an era of branding, hiring a controller or CFO also indicates that you have achieved a level of professionalism and governance that's attractive to investors, customers, suppliers, competitors and interested acquirers.

STARTING EARLY

The right CFO can support your transition strategy, helping you move toward an IPO or control sale to an acquirer. It is common for businesses to receive unsolicited expressions of interest after filing an S-1 registration statement with the Securities and Exchange Commission.

In addition to a dedicated finance team, savvy owners and managers will begin having discussions with external advisors early in the process to better understand the market cycle, valuations, cost of capital, exit options and any tax-advantaged pre- or post-liquidity planning techniques. Early discussions allow you to gauge credibility and motivation of potential advisors in advance of a specific transaction, such as a capital raise or unsolicited offer. Building a relationship over time lets you back-test the quality of the advice and should lead to a long-term, mutually advantageous relationship.

As the business lifecycle continues to accelerate, opportunistic entrepreneurs are making preparations by surrounding themselves with a multidisciplinary team of employees and advisors who can react quickly and strategically—and reap additional value as a result.

An industry in flux: Transformational trends

Stephen Van Besien
Senior Banker
J.P. Morgan Private Bank

Celgene CEO Mark Alles kicked off the annual Conference Monday morning, and the Summit, New Jersey-based company did not disappoint investors with the announcement of the Impact Biomedicines acquisition for as much as $7 billion, based on FDA milestone approvals and contingent payments. The San Diego-based blood-disease biotechnology company provides Celgene access to fedratinib—a kinase inhibitor that has shown promise as a potential treatment for a type of blood cancer.

The overriding sentiment at the Conference was that current tax reform and repatriation of overseas cash will likely lead to a resurgence of M&A activity in the biopharma sector in 2018. Large-cap firms may increasingly look to deepen pipelines and acquire innovative science through selective acquisitions.

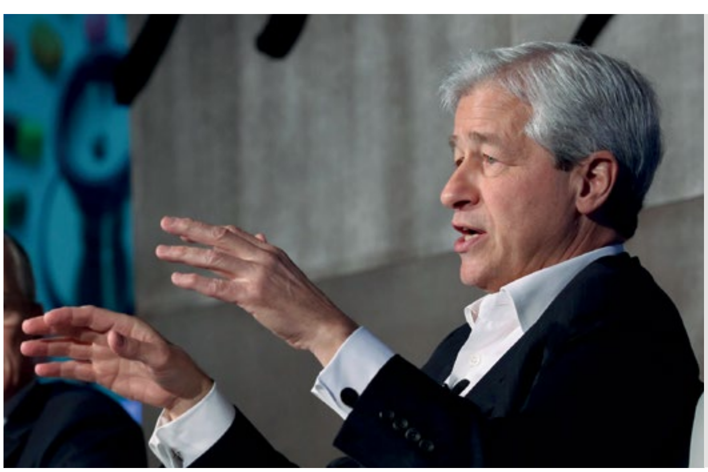
CEOs praised the pro-growth changes, but cautioned that just because they can access cash doesn't mean they'll change their capital allocation strategy, which includes mergers and acquisitions when appropriate. Johnson & Johnson CEO Alex Gorsky stressed the importance of maintaining a consistent approach to disciplined acquisitions and strategic allocation of capital. The tax legislation provides a more competitive landscape globally for U.S. companies, thereby enabling greater financial flexibility.

As anticipated, the weeks immediately following the Conference saw a flurry of activity that we anticipate will have tailwinds throughout the year. Of note was Celgene's announcing its agreement to buy the rest of Juno Therapeutics it didn't already own for $9 billion in cash. This latest deal for Celgene will provide access to Juno's pipeline of (CAR) T-cell cancer therapies. The French healthcare group Sanofi announced an agreement to buy U.S. hemophilia specialist Bioverativ for $11.6 billion, a major play to strengthen its presence in treatments for rare diseases. We'll be keeping an eye on deal flow and what it means to our clients.

TECH TRANSFORMING HEALTHCARE

The role of technology in healthcare discovery and delivery was another theme resonating with investors at this year's Conference. Innovation in molecular engineering and gene editing is leading to significant advancement in the approach to cancer treatments. Gilead Sciences' $10 billion acquisition of Kite Pharma in October 2017 underscores the potential of chimeric antigen receptor (CAR) T-cell therapies. In this approach, immune cells are removed from a patient, armed with new proteins and reintroduced to the patient. We can expect to see more interest in (CAR) T-cell therapies over the coming year.

Increasingly, hospital and healthcare systems are turning to digital upstarts to develop apps and revamp websites to measure and treat patients. Digital tools are becoming invaluable to fostering relationships with individuals and improving their health by seamlessly integrating daily personalized health and wellness throughout the healthcare journey.



> "We are using technology to serve customers faster and better."
>
> **Jamie Dimon**
> Chairman and Chief Executive Officer
> JPMorgan Chase & Co.

Balancing act: The shift to value-based care

Daniel McNamara
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As we view the healthcare industry over the coming year, one of the most interesting developments is the continuing shift from volume-based to value-based care. The recent J.P. Morgan Healthcare Conference only confirmed this trend, which holds implications for both delivery and payment models.

Pay-for-performance reimbursement, including bundled payments and accountable care organizations, is moving us away from traditional fee-for-service and toward an outcomes-based system. The Centers for Medicare and Medicaid Services (CMS), among others, are looking for healthier outcomes and building in incentives based on quality of care and patient clinical results. This shift has implications for patients, but also for providers, who must balance cost and quality as they look to deliver consumer-centric healthcare.

THE DEMAND FOR TRANSPARENCY

A related major trend we are seeing is “retailization” in healthcare. There has been talk of consumerism for years, but we are now seeing tangible results. Chief among them is greater transparency driven by consumers’ increased concern with the cost of care. This is being fueled in part by higher deductibles.

The explosion in urgent care facilities and retail clinics throughout the United States points to the increase in consumer demand for convenience. We are also seeing new technologies that are revolutionizing patient records, increasing transparency of information on the services a patient receives.

INFLUX OF NEW PLAYERS

The trends toward value-based care and consumerism mean that businesses we haven’t seen traditionally will be entering the healthcare arena. Technology-related will be chief among them, from mobile health and sensor businesses to companies that will gather and analyze streams of data to improve drug R&D as well as care delivery.

With so many new players, we expect to see continued M&A activity, including private equity and joint ventures. Company mergers, acquisitions and partnerships will be to create scale for efficiency, cost cutting and increased patient access. Care delivery models are changing, with long hospital stays giving way to short-term hospital care and care delivery in outpatient settings, patient homes or even through mobile apps. These new delivery models are all designed for greater efficiency in delivering the same or even better level of care as traditional models.

As we’ve seen with the recent mergers, consolidation in the payor space highlights the need not only to control costs through pharmacy benefits management and improving post-acute care outcomes, but also the increased need to focus on data analytics to be more nimble and consumer-centric.

> “The trends toward value-based care mean businesses will enter the healthcare arena that we haven’t traditionally seen.”

Not-for-profit providers are all looking for ways to diversify their revenue streams, and are thus outwardly looking for increased partnership and investment in for-profit companies that will help improve the patient experience and allow them to be more forward looking.

DATA IS KEY

Mobile health technologies are already enabling patients to access more transparent information and take a more proactive role in their healthcare. The wellness movement certainly is part of the value-based care picture.

And with the advent of increased data from many more sources, the entire arena of predictive and preventive healthcare approaches will only increase. This holds implications for efficiency across the sector, as providers and patients come to appreciate that a value-based approach is the way to control costs.

These and other developments make healthcare one of the most exciting sectors to watch in 2018.

On the rise: Celebrating women in healthcare

Christine Leong Connors
Head of the U.S. Healthcare Practice
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J.P. Morgan Private Bank

Every year, the Westin St. Francis in San Francisco is the setting for the healthcare industry's largest investment conference.

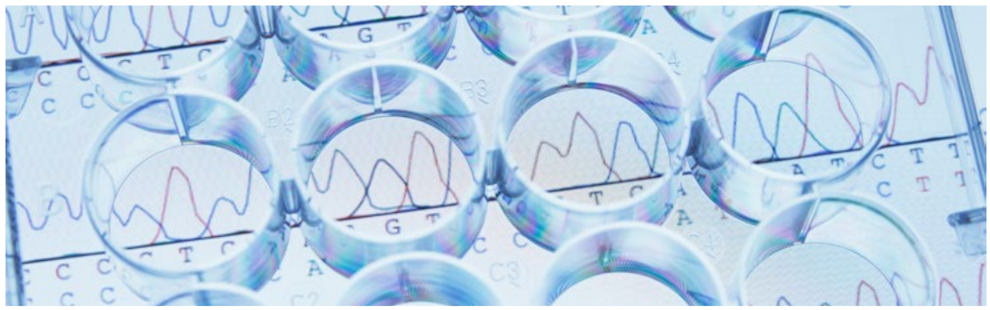
And for the past 10 years, a very different setting—Saks Fifth Avenue's shoe salon, or this year, the Giorgio Armani boutique in San Francisco—has served as the gathering place for senior women executives and venture partners to celebrate their passion for the industry, share success stories, exchange ideas, network and conduct business.

Hosted by J.P. Morgan Private Bank and partners like heathymagination, TPG Biotech, GE and J. Thelander Consulting, the gathering has become one of the most anticipated satellite events surrounding the Conference.

The growth in attendance—from around 65 women in the early days to more than 250 this year—mirrors the increasing vitality of women leaders in the industry. Every year, the level of excitement and engagement among these women only increases, and it is gratifying to see the growing interest reflecting the number of women who are leading companies, driving innovation and making room for more women to enter the industry.

BULLISH ON MOMENTUM

While this gathering offers an opportunity for many of us to connect in person, it has also become an important forum for exchanging ideas and discussing opportunities. Work definitely gets done here, with deals forged and alliances established.



Women attend from all sectors and from across the United States. Although most are leaders in private companies, we are seeing more corporate leaders and venture partners in recent years.

This year in particular, the overriding sentiment was one of excitement about the momentum in the industry. These women were bullish on the potential for increased M&A activity resulting from the U.S. corporate tax reform and one-time repatriation of funds held overseas.

SUPPORTING CHANGE AGENTS

Besides being a networking opportunity, the event focuses every year on raising funds for a different healthcare-related charity. For 2018, we were pleased to host Amanda Rice, a three-time cancer survivor who founded Chick Mission, which educates women about the effects of cancer treatments on fertility and helps make sure insurance covers infertility treatments for women cancer survivors.

PROGRESS IN THE NUMBERS

This year, JPMorgan Chase Chairman and Chief Executive Officer Jamie Dimon spoke at our gathering, illustrating his personal commitment to women's advancement. He proudly noted that women make up nearly 50% of his direct reports and 50% of all employees. He also spoke about the firm's strong and successful programs to support and promote women in leadership and beyond.

Celebrating women visionaries and leaders who are passionate about healthcare and who are making important contributions to science and business, as well as the opportunity to support charitable causes, makes this event one of the Conference's highlights every season.

“It is gratifying to see the number of women who are leading companies, driving innovation and making room for more women to enter the industry.”

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