

BIOCORP

Healthcare

MEDTECH

CORPORATE Coverage Initiated

Fair Value **EUR25**

Share price EUR14.45

Bloomberg / Reuters ALCO FP/ALCOR.PA

Keep Me Connected!



Biocorp a pharmaceutical devices specialist. Created in 2004, the group manufactures traditional medical devices (such as stoppers, droppers etc.) for big players such as Sanofi and has also developed a range of innovative products to improve liquid transfer or to protect patients from needles during injections. Biocorp has signed several agreements to develop and manufacture new devices which should generate about EUR5m/year in sales starting in 2021.

Connected devices, the growth engine. However, the main franchise developed by Biocorp concerns connected devices. This business will be the key growth driver in the future. The most advanced product is the Mallya add-on cap, developed for drug injection pens. The first market for Mallya is diabetes with insulin pens (and potentially GLP-1 pens). Mallya allows patients to record their insulin dose, time of injection etc. and to add this data to their regular blood glucose level captured by a connected glucose meter. This automatic data collection has been shown to help patients reach the HbA1c recommended target and increase treatment adherence. As such, payers are very interested in this type of device and should agree to cover it. Interestingly, competition in this field exists but is not really fierce and Mallya appears to be the easiest and most comprehensive device. Biocorp has signed two agreements with Sanofi and AgaMatrix for the distribution of Mallya and the first sales should occur in 2020. We expect peak sales to reach about EUR100m in 2026.

Valuation of EUR25/share. Our DCF valuation of EUR25/share stems mainly from Mallya sales and cash flow generation. We apply a PoS of 80% to our Mallya sales estimates since the product is not on the market yet. Our WACC is 13% in line with other Medtech companies of Bryan, Garnier universe. Using average EV/Sales multiple of some peers we derive a valuation of EUR26/share. Finally, since the founder, chairman and major shareholder (48%) of the company is 72 years old, we believe the share harbours speculative appeal since he would want to sell its shareholding at some point of time.

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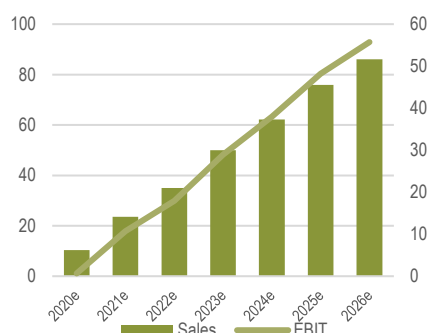
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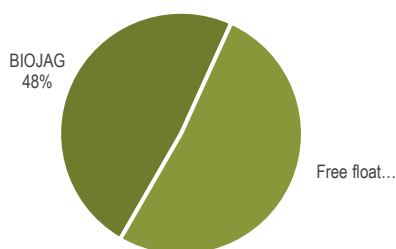
Market Cap. EUR60m

EPS 3Y CAGR NM

Sales vs. EBIT



Shareholders



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Fiscal year end 31/12	2017	2018	2019	2020e	2021e	2022e	2023e	2024e	2025e	2026e
Financial Summary										
EPS (EUR)	-2.20	-1.32	0.23	0.15	2.08	3.48	5.60	7.35	9.32	10.77
Restated EPS (EUR)	-2.20	-1.32	0.23	0.15	2.08	3.48	5.60	7.35	9.32	10.77
% change	-75.4%	-40.3%	-	-36%	1313%	67%	61%	31%	27%	15%
FCF (EUR)	-1.43	-1.40	0.40	-0.08	1.66	3.04	5.05	6.85	8.74	10.30
Net dividend (EUR)	0.00	0.00	0.00	0.03	0.42	0.70	1.12	1.47	1.86	2.15
Average yearly	9.77	9.65	11.18	-	-	-	-	-	-	-
Ävg. Number of Historical	3.39	4.03	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15
Valuation (x)	36.31	42.90	48.70	-	-	-	-	-	-	-
EV/Sales	13.6x	11.4x	5.3x	6.07x	2.36x	1.28x	0.56x	0.08x	-0.32x	-0.67x
EV/EBITDA	-4.7x	-8.1x	55.6x	81.97x	5.17x	2.49x	0.96x	0.13x	-0.50x	-1.04x
EV/EBIT	-4.7x	-8.1x	55.6x	81.97x	5.17x	2.49x	0.96x	0.13x	-0.50x	-1.04x
P/E	-4.4x	-7.3x	48.3x	98.11x	6.95x	4.15x	2.58x	1.96x	1.55x	1.34x
FCF yield (%)	-14.7%	-14.5%	3.5%	NM	11.52%	21.04%	34.95%	47.38%	60.51%	71.27%
Net dividend yield	0.0%	0.0%	0.0%	0.2%	2.9%	4.8%	7.8%	10.2%	12.9%	14.9%
Profit & Loss Account (EURm)										
Revenues	2.67	3.77	9.27	10.31	23.61	35.01	49.92	62.17	75.92	86.04
Change (%)	-12.0%	41.2%	145.9%	11.2%	129.0%	48.3%	42.6%	24.5%	22.1%	13.3%
Adjusted EBITDA	-7.803	-5.269	0.875	0.764	10.785	18.058	29.041	38.126	48.338	55.829
EBIT	-7.803	-5.269	0.875	0.764	10.785	18.058	29.041	38.126	48.338	55.829
Change (%)	-74.8%	-32.5%	-	-12.8%	1312.5%	67.4%	60.8%	31.3%	26.8%	15.5%
Financial results	-0.01	-0.26	-0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pre-Tax profits	-7.47	-5.31	0.96	0.76	10.78	18.06	29.04	38.13	48.34	55.83
Tax	0.00	0.00	0.00	0.15	2.16	3.61	5.81	7.63	9.67	11.17
Net profit	-7.47	-5.31	0.96	0.61	8.63	14.45	23.23	30.50	38.67	44.66
Restated net profit	-7.47	-5.31	0.96	0.61	8.63	14.45	23.23	30.50	38.67	44.66
Change (%)	-75.8%	-28.9%	-	-36.4%	1312.5%	67.4%	60.8%	31.3%	26.8%	15.5%
Cash Flow Statement (EURm)										
Operating cash	-4.00	-5.25	2.04	0.08	7.85	14.01	22.94	30.88	39.30	46.15
Change in working	0.18	-0.82	0.38	-1.03	-1.33	-1.14	-1.49	-1.22	-1.37	-1.01
Capex, net	-0.86	-0.37	-0.40	-0.41	-0.94	-1.40	-2.00	-2.49	-3.04	-3.44
Free Cash flow	-4.68	-5.66	1.64	-0.33	6.90	12.61	20.94	28.39	36.26	42.71
Financial	0.00	-0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dividends	0.00	0.00	0.00	0.00	-0.12	-1.73	-2.89	-4.65	-6.10	-7.73
Capital increase	0.00	4.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	-0.10	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Change in net debt	-4.97	-0.79	1.64	-0.33	6.78	10.88	18.06	23.74	30.16	34.98
Net debt (+)/cash	3.18	3.97	2.33	2.66	-4.12	-15.00	-33.06	-56.80	-86.96	-121.93
Balance Sheet (EURm)										
Tangible fixed	1.81	1.24	0.94	0.86	1.25	1.95	2.75	3.64	4.67	5.61
Intangibles assets	0.13	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Cash & equivalents	0.69	1.34	2.98	2.65	9.43	20.31	38.37	62.11	92.27	127.25
current assets	2.16	1.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other assets	0.29	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Total assets	5.08	4.88	4.32	3.90	11.08	22.66	41.51	66.14	97.33	133.25
L & ST Debt	3.87	5.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Others liabilities	2.47	1.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Shareholders' funds	-1.26	-1.82	-0.86	-0.25	8.26	20.98	41.32	67.17	99.75	136.67
Total Liabilities	5.08	4.88	-0.86	-0.25	8.26	20.98	41.32	67.17	99.75	136.67
Ratios										
Gross margin	95.0%	82.3%	109.8%	85.0%	80.0%	75.0%	75.0%	75.0%	75.0%	75.0%
EBITDA margin	-168.9%	-114.0%	17.0%	12.3%	48.0%	53.6%	60.6%	63.9%	66.3%	67.8%
Net debt/EBITDA	-0.70	-0.92	1.48	2.10	-0.36	-0.80	-1.09	-1.43	-1.73	-2.09
Operating margin	-292.2%	-139.8%	9.4%	7.4%	45.7%	51.6%	58.2%	61.3%	63.7%	64.9%
Tax rate	0.0%	0.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
Net margin	-279.6%	-140.7%	10.4%	5.9%	36.5%	41.3%	46.5%	49.1%	50.9%	51.9%
ROE	590.5%	291.5%	-111.6%	-245.1%	104.5%	68.9%	56.2%	45.4%	38.8%	32.7%
ROCE	-350.6%	-298.2%	64.5%	30.1%	229.9%	258.2%	294.8%	305.2%	311.7%	311.1%
Gearing	-252%	-218%	-271%	-1067%	-50%	-72%	-80%	-85%	-87%	-89%
Dividend payout	0.0%	0.0%	0.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%

Source: Company Data; Bryan, Garnier & Co ests.

EXECUTIVE SUMMARY

Biocorp is a pharmaceutical device specialist. It was created in 2004 by Jacques Gardette, the founder of Biodome and has been listed on Alternext (Paris) since 2015. Biocorp's "historical" business is split into manufacturing of traditional devices such as stoppers, droppers etc. for pharma companies, and the development and manufacturing of innovative devices. In this area the group has signed several agreements with companies such as Virbac (for a new dedicated stopper). Other projects have been developed but are not commercialised yet like a system to protect patients from the needle before and after injection (Newguard) or a new reconstitution device (Biopass). However, this business is not the future growth driver for Biocorp and with the agreements signed, we estimate it should generate about EUR5m in recurring sales starting in 2021.

Connected devices, the future for Biocorp. The key franchise set to drive growth concerns connected devices. Biocorp has developed three connected devices, Mallya, Datapen and Injay and has already signed some agreements for the most advanced of these, Mallya. The first market for Mallya is diabetes with insulin pens (and potentially GLP-1 pens). The device is a cap that can be added onto a disposable pen, which collects key data for the patient and the doctor (insulin quantity, time of injection etc.). The data is sent automatically to an application that already collects blood glucose levels and therefore guides the patient in calculating the insulin dose and helping them to stay on the recommended target HbA1c level and avoid hyper or hypoglycemia. The result is better adherence to the treatment and lower costs for the healthcare system. As such, we believe payers should cover and reimburse the device as is the case for glucose meters. Regarding competition, only one connected pen is approved by the FDA but it is a reusable pen. Mallya will mostly be used with disposable pens which represent about 90% of the pen market for diabetes. Other competitors are less advanced than Biocorp with a less comprehensive device. Biocorp has signed two agreements with Sanofi and AgaMatrix for the distribution of Mallya. The first sales should occur in 2020. We expect peak sales to reach about EUR100m in 2026.

Valuation of EUR25/share. Our DCF valuation of EUR25/share stems mainly from Mallya sales and cash flow generation. We apply a PoS of 80% to our Mallya sales estimates since the product is not on the market yet. We use a WACC of 13% in line with other Medtech companies in the Bryan, Garnier universe. Finally, since the founder, chairman and major shareholder (48%) of the company is 72 years old, we believe the share harbours speculative appeal we believe the share harbours speculative appeal since he would want to sell its shareholding at some point of time.

Biocorp est un spécialiste des dispositifs pharmaceutiques. Biocorp a été créée en 2004 par Jacques Gardette, le fondateur de Biodome. Elle est cotée sur Alternext (Paris) depuis 2015. Biocorp est spécialisée dans le développement et la fabrication de dispositifs pharmaceutiques. Son activité "traditionnelle" est divisée en deux parties : la fabrication de dispositifs traditionnels comme les bouchons, les compte-gouttes...etc pour les entreprises pharmaceutiques et le développement et la fabrication de dispositifs innovants. Dans ce domaine, Biocorp a signé plusieurs accords avec des sociétés comme Virbac (pour un nouveau bouchon dédié). D'autres projets ont été développés, mais pas encore commercialisés, comme un système de protection du patient contre l'aiguille avant et après l'injection (Newguard) ou un nouveau dispositif de reconstitution (Biopass). Cependant, cette activité n'est pas le futur moteur de croissance de Biocorp. Avec les accords signés, nous estimons que cette activité devrait générer environ 5 millions d'euros de ventes récurrentes à partir de 2021.

Les dispositifs connectés, l'avenir de Biocorp. La franchise clé qui sera le moteur de la croissance est basée sur les appareils connectés. Biocorp a développé trois dispositifs connectés, Mallya, Datapen et Injay. Le plus avancé, pour lequel Biocorp a déjà signé des accords, est Mallya. Le premier marché pour Mallya est celui du diabète et des stylos à insuline (et potentiellement des stylos GLP-1). Ce dispositif est un "capuchon" à adapter sur le stylo jetable, qui collecte des données clés pour le patient et le médecin (quantité d'insuline, moment de l'injection...). Ces données sont envoyées automatiquement à une application qui recueille déjà les taux de glycémie. Ainsi, l'application guidera le patient pour le calcul de la dose d'insuline et l'aidera à rester sur le niveau cible recommandé de HbA1c et à éviter l'hyper ou l'hypoglycémie. Il en résulte une meilleure observance du traitement et une réduction des coûts pour le système de santé. C'est pourquoi nous pensons que les payeurs devraient couvrir et rembourser le dispositif comme c'est le cas pour les glucomètres. En ce qui concerne la concurrence, un seul stylo connecté est approuvé par la FDA, mais il s'agit d'un stylo réutilisable. Mallya sera principalement utilisé avec des stylos jetables qui représentent environ 90% du marché des stylos chez les diabétiques. Les autres concurrents sont moins avancés que Biocorp avec un dispositif moins complet. Biocorp a signé deux accords avec Sanofi et AgaMatrix pour la distribution du Mallya. Les premières ventes devraient avoir lieu en 2020. Nous prévoyons que les ventes maximales atteindront environ 100 millions d'euros en 2026.

Valorisation de 25 EUR/action. Notre évaluation DCF de 25 EUR/action provient principalement des ventes de Mallya et de la génération de flux de trésorerie. Nous appliquons un PoS de 80% à nos estimations de ventes de Mallya puisque le produit n'est pas encore sur le marché. Nous utilisons un WACC de 13%, en accord avec les autres sociétés de Medtech de l'univers Bryan, Garnier. Enfin, comme le fondateur, président et actionnaire principal (48%) de la société a 72 ans, nous pensons qu'il y a un aspect spéculatif sur le titre car il souhaitera certainement vendre sa participation à moyen terme.

Contents

EXECUTIVE SUMMARY	3
PART 1: BIOCORP, A SPECIALIST IN CONNECTED HEALTH	5
The historical activity is set to continue but not as a key driver	5
Connected devices, the new growth engine	5
PART 2: PART 2: DIABETES, THE PERFECT AREA FOR CONNECTED DEVICE	7
Diabetes: some facts and figures	7
Adherence to treatment needs to be improved	9
Digital health to help patients comply better	10
PART 3: MALLYA IS THE BEST OPTION FOR (REUSABLE) PENS	13
The insulin pen market is significant and growing	13
Connected pen market: a new area with a bright future	14
Mallya the best option for obtaining a connected pen	15
Commercial model with two angles	15
What about competition?	16
- COMPANION MEDICAL: SOME LIMITATIONS	17
- EMPERRA: RESTRICTED TO GERMANY for the time being	18
- COMMON SENSING: NOT 100% ACCURATE	18
- BIGFOOT BIOMEDICAL AND INNOVATION ZED: LIMITED FUNCTIONALITY	19
- diabnext: not as accurate as mallya	19
- Novo Nordisk: a shy market entry	20
A first agreement signed with Sanofi	20
A second agreement with Agamatrix	21
Sales potential of about EUR100m	21
PART 4: REST OF THE BUSINESS	23
Datapen, a motor-driven injection pen	23
Injay, the connected syringe at reasonable cost	24
PART 5: VALUATION: SIGNIFICANT UPSIDE	25
DCF valuation: EUR25/share	25
Peer comparison: EUR26/share	26
Speculative appeal that should not be forgotten	26

Part 1: Biocorp, a specialist in connected health

Biocorp is based in Issoire (France) and is specialised in medical devices. The historical business focuses on developing and manufacturing "traditional" pharmaceutical devices such as stoppers, droppers etc. More recently, Biocorp added a business to develop connected medical devices.

The historical activity is set to continue but not as a key driver

While the historical activity is set to continue generating sales, most future investments will be dedicated to connected devices. However, Biocorp remains a subcontractor for certain medical devices and has very high quality equipment and buildings (sterile areas) for its manufacturing. Biocorp's clients are well known pharmaceutical companies such as Sanofi, Norgine and Thea Pharma.

Starting in 2020, the company is also set to benefit from contracts signed over the past two years regarding specific product developments:

- Virbac: this contract was signed in May 2017 to develop and manufacture a specific stopper that allows multiple deliveries for veterinary usage. Although Virbac owns the molds and equipment (and paid for capital expenditure), Biocorp is the sole subcontractor to manufacture these stoppers. In 2020, Virbac should be able to use the stopper with five of its products. We estimate the contract should generate about EUR1m/year starting in 2021.
- Ferring: This contract was signed in June 2018 for the development and manufacturing of a specific stopper. Biocorp received an upfront payment of EUR450k and production should start in 2020. We believe this contract could generate around EUR300k/year.
- VitroBio Pharma: in November 2019, Biocorp signed a 10-year contract to produce a pump and a vial and to fill and assemble them in a sterile environment. Biocorp announced that this contract should generate sales of EUR10m over its 10-year duration. Manufacturing is due to start in June 2020.

In addition to these traditional devices and specific contracts, Biocorp has developed several original devices (Newguard, Biopass, Newseal etc.) but most of these are not commercialised yet.

Overall, we estimate this "historical" activity should generate about EUR7m/year in the future.

Connected devices, the new growth engine

While the historical business is set to continue and boasts high margins, the future of Biocorp lies in connected devices.

The group has developed several devices in different therapeutic areas:

- **Inspair:** This is a connected system that automatically captures each actuation of the inhaler and assesses usage of the device: right actuation time, optimal hand-breath coordination, proper respiratory air flow. The data is transferred in real-time to a companion software thanks to Bluetooth technology. Biocorp signed an agreement with VARI, a subsidiary of Lindal Group, which manufactures valves and actuators for the pharmaceutical industry, and covers South-America, Eastern Europe, the Middle East and South-East Asia. The agreement included an initial feasibility study which led to an undisclosed upfront payment, and marketing agreements that are more likely in the 2021/2022 timeframe. However, Inspair will not be the most important connected device for Biocorp.
- **Injay:** This add-on to prefilled syringes collects essential information such as injection completed, time and date, type of drug, batch number and expiration date. Information is sent via NFC technology to an app on mobile, tablet or PC. In addition, the device should attract some interest from vaccine manufacturers in view of a Covid-19 vaccine since it could help know which patients have been vaccinated with automatic records in an electronic health file.
- **Datapen:** This is a smart pen injector, compatible with standard cartridges and adaptable to dual chamber cartridges. It is designed to ease treatment delivery and monitoring thanks to its smart features: electromechanical injection, embedded Bluetooth set. It should target the market of dual-chamber cartridges.
- **Mallya:** This is a smart cap which automatically captures injection data (dose, date and time) and sends the information in real time to a companion software. Biocorp intends to focalise Mallya on diabetes for insulin pens and potentially GLP-1 pens. It also intends to develop it for hormones used in infertility and short stature.

The most important of these devices is Mallya which is the near-term focus for Biocorp.

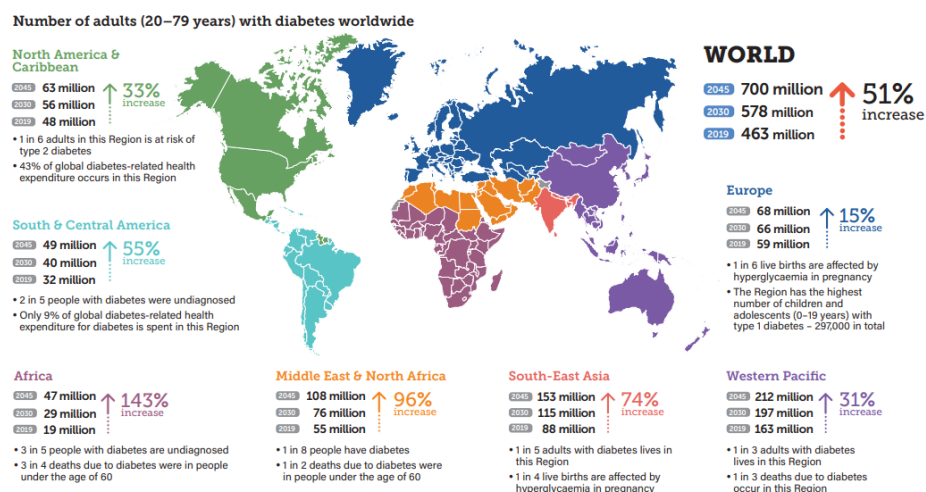
Part 2: Part 2: Diabetes, the perfect area for connected device

Diabetes is a chronic disease that requires multiple blood glucose monitoring in a day and multiple insulin injections for type 1 diabetics. For continuous improvement in their treatment, patients must record their blood glucose level and the time and volume of insulin injection. This is a very fastidious task that is often missed. As such, any automation techniques could significantly improve efficacy of the treatment.

Diabetes: some facts and figures

Around 463 million people were estimated to have diabetes in 2019 and this number should increase by 51% in 2045. The global prevalence of diabetes is estimated at 9.3% with a higher number of 10.4% in high-income countries (which represent 95 million of the people affected).

Fig. 1: Prevalence of diabetes



Source: International Diabetes Federation

There are two types of diabetes:

- Type 1 is an autoimmune disease where the immune system attacks beta cells in the pancreas causing the pancreas to produce a very low amount or no insulin. People with type 1 diabetes need daily insulin injections to maintain a glucose level in the appropriate range. It represents about 10% of diabetic cases and is the major cause of diabetes in childhood but can occur at any age.
- Type 2: In type 2 diabetes, hyperglycemia is the result, initially, of the inability of the body's cells to respond fully to insulin, a situation termed as 'insulin resistance'. During the state of insulin resistance, the hormone is ineffective and, in due course, prompts an increase in insulin production. Over time, inadequate production of insulin can develop as a result of failure of the pancreatic beta cells to keep up with demand. Type 2 diabetes is most commonly seen in older adults, but is increasingly seen in

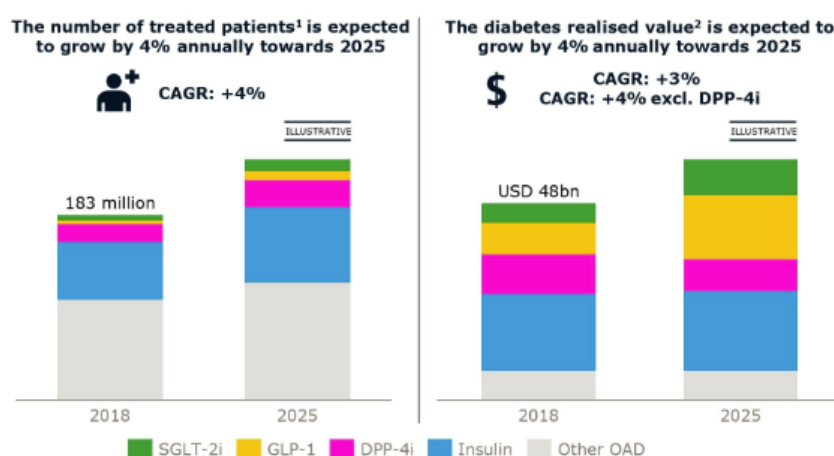
children and younger adults owing to rising levels of obesity, physical inactivity and inappropriate diet. The treatment starts generally with oral drugs (OAD) and as the disease progresses, people need to take GLP-1 or insulin or both.

Although diabetes is now a well-known disease with numerous treatments available, it is estimated that 4.2 million people died from diabetes and its complications in 2019.

The global health expenditure related to diabetes was estimated at about USD760bn in 2019 and is estimated to reach USD825m by 2030.

The most widely-used drugs in volume terms are "historical" oral anti-diabetics, which are more or less all generics. Insulin is the second most prescribed type of drug in volume terms.

Fig. 2: Drugs used for diabetes treatment (volume and value)



Source: Novo Nordisk

Finally, it is impressive to see that only 50% of diabetics are diagnosed and that only 12% are at treatment goal.

Fig. 3: Proportion of patients treated for their diabetes and at goal



**That is, recommended glucose levels.

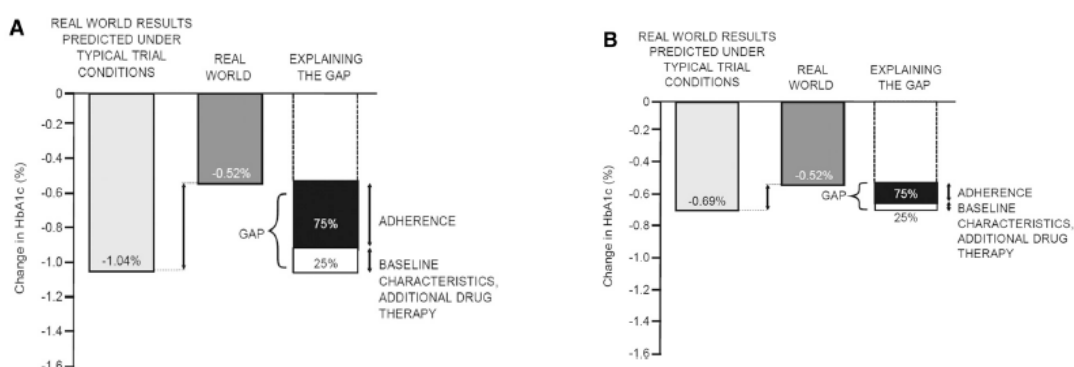
Source: Dexcom

Adherence to treatment needs to be improved

Despite the availability of many treatments and the launch of new ones associated with more convenient pens, it is fair to say that adherence to treatment is far from optimal.

The extent of the gap between results obtained during clinical trials where patients are closely monitored and real-life situations has been well documented.

Fig. 4: Efficacy gap due to poor adherence one year after initiating GLP-1 (A) and DPP-4 (B)

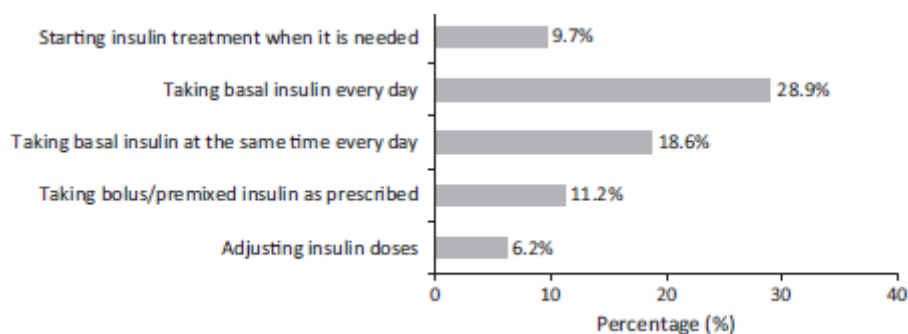


Source: Edelman SV et al. *Diabetes Care*. 2017 Nov;40(11):1425-1432

What is interesting is that 75% of the gap between real life and what should be expected in a clinical trial is explained by poor treatment adherence whatever the administration route of the treatment i.e. whether it is an injectable drug (GLP-1) or an oral one (DPP-4).

Regarding insulin, the picture is the same and, in a study published by Peyrot et al. (Fig.5), the maximum percentage of patients taking their basal insulin correctly every day was about 30%.

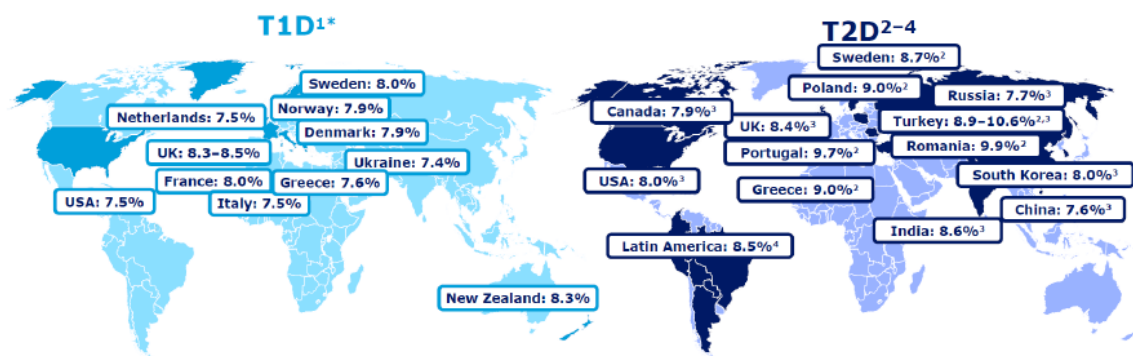
Fig. 5: Physician's report of patient success with insulin treatment tasks



Source: Peyrot et al. *Diabet Med*. 2012 May;29(5):682-9.

The result of this low compliance with treatment is that the theoretical HbA1c target of no more than 7% is not reached in any country and is usually much higher (Fig.6).

Fig. 6: HbA1c average level observed in different countries for diabetes type1 (left) and diabetes type 2 (right) - in adults over 25 years

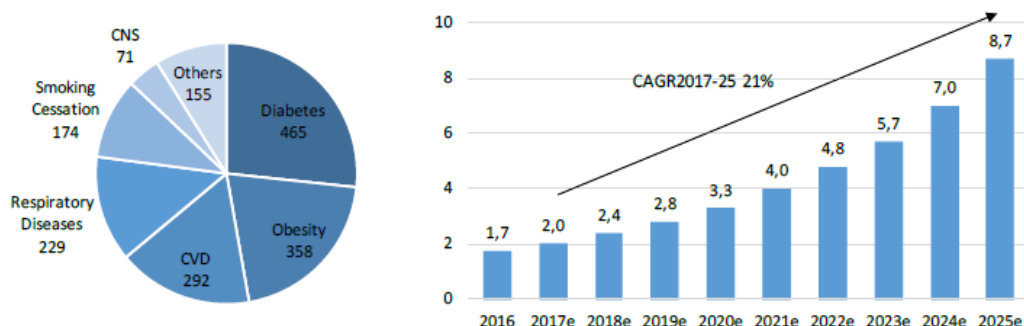


Source: 1. McKnight et al. *Diabet Med* 2015;32:1036-50; 2. Oguz et al. *Curr Med Res Opin* 2013;29:911-20; 3. Polinski et al. *BMC Endocr Disord* 2015;15 :46; 4. Mendivil et al. *Curr Med Res Opin* 2014;30:1769-76

Digital health to help patients comply better

Globally, the Digital Health market was estimated at USD215bn in 2017 and is set to grow at c. 15% p.a. on average out to 2025. The Digital Therapeutics segment is one of the fastest growing ones, accounting for USD2bn and set to grow by c.21% a year on average to USD9.5bn towards 2025e.

Fig. 7: Digital health equipment market (USDbn)



Source: Grand View Research

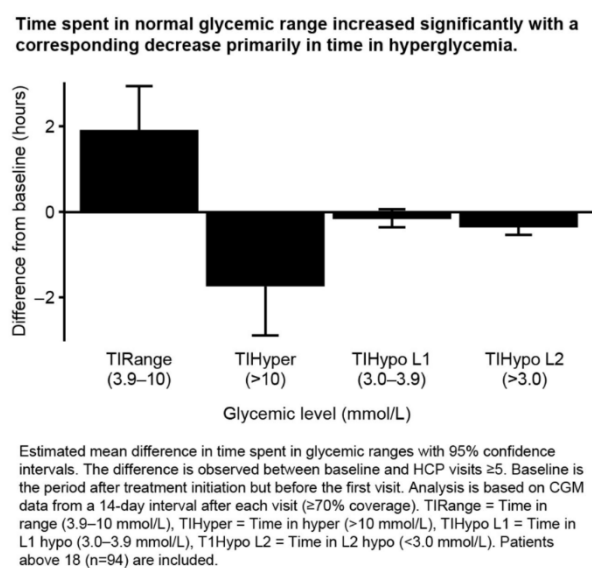
This type of equipment is made of personalised digital solutions for patients to manage their care, provide everyday support and help them achieve specific disease prevention or management goals. In addition to the benefits offered to patients to self-manage their health, digital health equipment also plays a role in telemedicine, facilitating remote patient monitoring by care teams. These new clinical practices are the focus of interest from many national health systems in a bid to improve the quality of care and enhance treatment efficacy, while also streamlining healthcare costs. For example, since the beginning of this year, Germany has authorised reimbursement of digital health applications if they are prescribed by a doctor.

Unsurprisingly, chronic diseases such as diabetes and some cardiovascular diseases are expected to represent the biggest market segments for these applications.

In diabetes, digital equipment has existed for many years but has been limited to blood glucose monitoring (BGM). The arrival of connected glucose meters for BGM and the launch of Continuous Blood Monitoring (CGM) devices such as Dexcom and Abbott Freestyle have significantly helped patients to monitor and register their glycemic parameters in a less fastidious way than with a classic notebook.

Since virtually no insulin pens are available on the market, they are clearly the missing piece of this connected environment for diabetics. A small study using the NovoPen 6 demonstrated the benefit of using connected pens. At each visit, pen data was downloaded at the clinic to support the patient-HCP dialogue. The results showed that thanks to this connected equipment, patients increased the time spent in the normal range for blood glucose by two hours per day (see Fig.8).

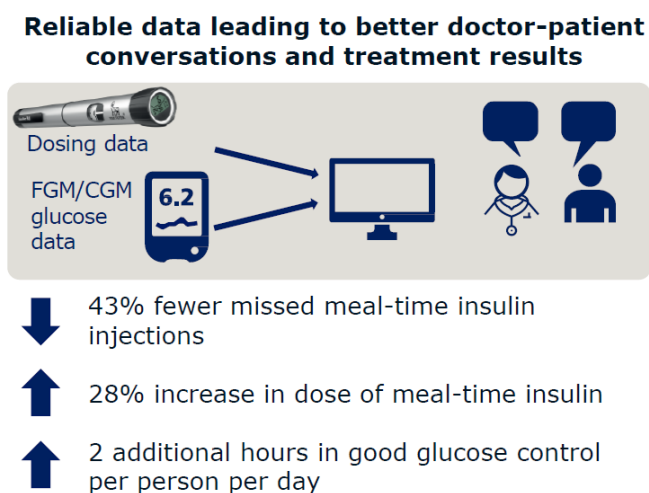
Fig. 8: Impact of a connected insulin pen on time spent in different glycemic stage



Source: Adolfsson P. et. al. ADA 2019; Increased Time in Range (TIR) Observed after Introduction of a connected Insulin Pen.

In addition, the digital equipment provides recommendations for the patient to adapt their insulin dose. It is widely recognised that most diabetics do not use the optimal dose of insulin out of fear of hypoglycemia and particularly nocturnal hypo episodes.

Fig. 9: Main positive impacts when using connected tools in diabetes management



Source: Novo Nordisk

In short, although innovation has been strong in blood glucose monitoring, the monitoring of insulin injection data remains the area where far more can be achieved.

Part 3: Mallya is the best option for (reusable) pens

Mallya was developed to transform a non-connected pen into a connected one. It is very simple to use since the patient simply has to add the device onto their pen.

Fig. 10: Mallya device

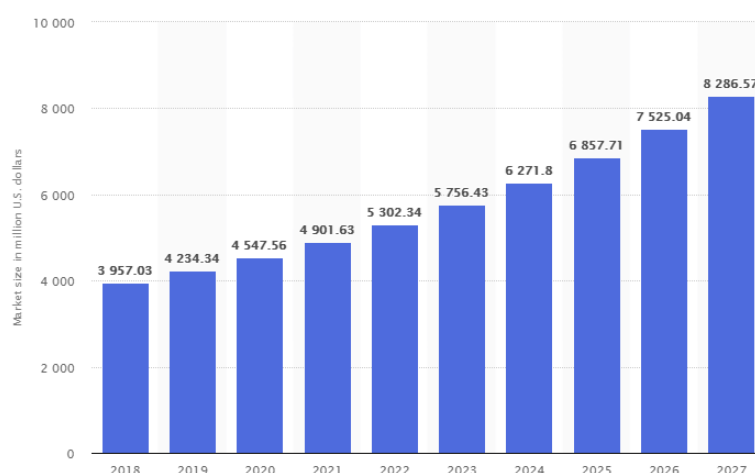


Source: Biocorp

The insulin pen market is significant and growing

The insulin pen market is huge since most developed countries still extensively use the "vial+syringe" mode of administration. The insulin pen market is expected to grow from USD4bn in 2018 to USD 8.3bn in 2027 (CAGR of 9%) thanks to the increase in the number of diabetics and increasingly extended usage in developed countries. However, the proportion of pen users varies a lot from one country to another. In Europe and Asia, about 95% of patients use pens whereas the rate is lower in the US since the pens are not always well reimbursed by insurers compared with "vial+syringe" options for which the co-pay could be as low as USD5 per prescription in some cases.

Fig. 11: Worldwide insulin pen market in value



Source: Statista

We estimate there are about 50-60 million diabetes patients worldwide treated with pens (insulin+GLP-1). The disposable pre-filled pen is the most commonly used with a worldwide market share of about 62%. In the US, this market share rises to about 90% among pen users.

While numerous pen manufacturers exist, the market leaders are the three biggest insulin providers i.e. Sanofi, Novo Nordisk and Eli Lilly. They all have disposable pens and reusable pens.

Fig. 12: Sanofi reusable pen AllStar (left) and disposable pens SoloStar (right)



Source: Sanofi

Fig. 13: Lilly reusable pen Humapen Luxura (left) and disposable pen Kwikpen (right)



Source: Eli Lilly

In addition to its "classic" pens, Novo Nordisk also launched the NovoPen Echo, a reusable pen that records the dose and time since last injection but which is not connected.

Fig. 14: Novo Nordisk reusable pens (left) and disposable pens (right)



Source: Novo Nordisk

Connected pen market: a new area with a bright future

The connected part of the pen market is very small today and some expect it could reach about USD123m in 2023. However, this number should be taken with care since no real market exists today with very few options offered.

As a comparison, the glucose meter market should grow from USD7.4bn in 2018 to about USD20bn in 2026 with half of this business generated by personal devices (the other half is for professional meters). In 2019, Abbot's FreeStyle Libre (CGM) had sales of USD1.8bn.

Eli Lilly and Novo Nordisk are the main groups working on connected insulin pens. Novo Nordisk appears to be the most advanced with the NovoPen 6 and NovoPen Echo Plus. However, it seems that development is not so easy since launches have been delayed by about one year. Novo Nordisk intends to launch both pens in some European countries only this year.

No recent news is available concerning the Eli Lilly pen.

Sanofi has a connected reusable pen under development, but for disposable pens, it has chosen the Mallya solution.

Mallya the best option for obtaining a connected pen

As seen above, diabetes requires numerous data to be collected by patients and since this is a fastidious task, most of them miss some data points or do not fill in their notebooks at all.

While blood glucose monitoring is quite well "digitalised", this is not the case for the insulin pen. One reason is certainly the capital expenditure required to manufacture such a device.

This is why Biocorp's Mallya proposal is certainly the best option for these three big players in diabetes. No additional capex is needed since Mallya can be adapted to all existing disposable (and reusable) pens (FlexPen & FlexTouch, Kwikpen and SoloStar).

Biocorp's priority is firstly disposable pens since they are the most popular, but Mallya can be adapted to reusable pens as well.

Its usage is very simple: 1/ Mallya is paired with the smartphone application, 2/ Mallya is attached to the pen, 3/ Mallya's selecting dose button is attached to the pen. The "connected pen" is ready to use.

Once the injection is made, Mallya transmits the data to a dedicated application on the patient's smartphone. Mallya is removable and reusable for two years.

Biocorp has also developed an IT system to secure and encrypt all the data transmitted from Mallya. But the main interest of Mallya is that it is an open system that can be adapted to a high number of applications.

Mallya is "approved" in Europe with a class IIb CE mark obtained in June 2019 and a filing is expected in H2 2020 with the FDA (CDRH division).

Commercial model with two angles

To commercialise Mallya, Biocorp expects to rely on two main types of player:

- Pharmaceutical companies selling insulin. Three companies are obviously leading the race here, namely Sanofi, Eli Lilly and Novo Nordisk. In this model, Biocorp sells Mallya to the pharmaceutical company at a defined price allowing Biocorp to have a "secured" price. The pharma companies will directly sell Mallya or go through a distributor. Finally, the patient will purchase its prescribed Mallya at the pharmacy level.

Manufacturers/distributors of blood glucose meters like AgaMatrix, Abbott, Roche etc. In that case, Mallya is sold as an OTC product in the various US drugstores and pharmacy chains.

The pharmaceutical company channel should represent the vast majority (80%) of the volumes sold, particularly in the US, since it should be covered by health insurance.

In addition to the two channels above, Biocorp has signed an agreement with iSage Rx (a subsidiary of Amalgam Rx) which markets an application allowing patients to receive automated advice about the way to adjust their insulin dose over time. The iSage Rx solution is only for basal insulin and is authorised in the US for adult patients (>21 years). This type of "service supplier" could be a third distribution channel.

However, even though patients with diabetes are generally motivated to buy solutions which may facilitate and improve their treatment, we believe that reimbursement will be needed for a Mallya to really take off.

It appears that US payers should be interested since the solution may allow them to capture data about patient treatment. Medicare and most of the private insurers/PBMs cover CGMs, which shows their willingness to promote the usage of connected devices. For example, with this type of coverage, the FreeStyle Libre 14 days costs USD40-65 per month for patients for the sensors and they may choose to use a dedicated reader for USD65 on the mobile app.

In Europe, glucose meters are generally reimbursed too and again, the example of the FreeStyle libre is interesting. In France, the cost of the reader is about EUR100 and the price for one sensor is about EUR40. The French Social Security system indicated that coverage of the FreeStyle Libre increased its total reimbursement bill for glucose meters by EUR90m (+17%) to EUR607m in 2018. This example highlights the success of smart equipment in diabetes and the fact that payers (and the French Social Security is not the easiest one to convince) are ready to reimburse connected devices to improve diabetes management.

However, before any reimbursement in Europe and to help obtain it, Biocorp will need to collect data to show the "pharmaco-economic" advantage of Mallya.

What about competition?

While many small companies are developing connected devices for insulin treatment, we believe that none of them is a real threat for Biocorp and Mallya.

Fig. 15: Main companies working on connected devices for insulin injection

Company	Product	Remarks	Insurance coverage	Price	Approval
Companion Medical	InPen	Reusable pen during 1 year (autonomy of the pen)	Yes	USD665/year with copay of USD35/year when covered c	FDA-CE mark
Empera	Esysta	Reusable pen - Replaceable batteries after 1 year	Yes in Germany		CE Mark
Common sensing	Gocap	Not on the market yet	no		
Diabnext	Clipinsulin	Same functionality as Mallya	?	EUR40	?
Bigfoot Biomedical	Timeinsulin	Add on to measure time from last injection	?		
Innovation Zed	Insulcheck	Same as Timeinsulin. Tracks time of last insulin injection	no	USD34	FDA - CE Mark

Source: Bryan, Garnier & Co estimates

COMPANION MEDICAL: SOME LIMITATIONS

This US company launched a connected "reusable" pen in 2017 called InPen, which is approved by the FDA and has obtained the CE mark. However, it can only be used with three short-acting insulins: Humalog, Novolog and FIASP.

In addition, its life expectancy is only one year meaning it needs to be replaced every year. Interestingly, the annual wholesale price of this device is about USD700 in the US. However, when covered by an insurance company, the annual co-pay is announced at just USD35. This demonstrates that insurers are ready to cover high price connected pens in diabetes treatment.

Like all the connected devices recently launched, it transmits collected data to an application on a smartphone.

Fig. 16: InPen from Companion Medical



Source: Companion Medical

Because of the limitations described above, we do not see this device as a real threat to Mallya.

EMPERRA: RESTRICTED TO GERMANY FOR THE TIME BEING

Emperra is a German company that launched the Esysta tools including an insulin pen.

The pen is reusable and compatible with all available insulin cartridges. It works with batteries which need to be replaced every year.

Although the pen has obtained CE marking it is only available in Germany at this stage, where it is reimbursed. Emperra intends to file its pen with the FDA but with no clear timing.

Fig. 17: Esysta pen from Emperra



Source: Emperra

Because of the limited geographic availability for the moment and the fact this is a dedicated reusable pen, we do not believe it could be a dangerous competitor to Mallya.

COMMON SENSING: NOT 100% ACCURATE

Another US company has developed a cap called Gocap that replaces the original pen cap. It measures the volume of liquid in the pen and can therefore be used with all pen types.

However, two weaknesses can be highlighted:

- Since there is a tolerability rate of $\pm 10\%$ in filling the insulin pen, Gocap is not 100% reliable;
- Gocap systematically removes two units at the beginning to take into account priming of the pen. However, only 10-15% of patients are thought to carry out priming. Therefore, the insulin unit count could be wrong right from the start of use of the pen.

Last but not least, the pen is not yet available on any market.

Fig. 18: Gocap from Common Sensing



Source Common Sensing

BIGFOOT BIOMEDICAL AND INNOVATION ZED: LIMITED FUNCTIONALITY

Both companies have developed a cap to add to insuline pens that measures only the time since the last insulin injection. As such, they are less comprehensive than Mallya and the other equipment described above.

Fig. 19: Timesulin from Bigfoot Biomedical (left) and Insulcheck from Innovation Zed (right)



Source: Companies

Both products have more or less the same price at USD35 and can be purchased on Amazon. Insulcheck has the advantage over Timeinsulin of being FDA-approved and having CE marking.

DIABNEXT: NOT AS ACCURATE AS MALLYA

French company Diabnext has developed the Clipsulin cap, which is very similar to Mallya in terms of functionality. It can be used with all available pens on the market and, like Mallya, captures the injected dose, the time of injection etc... However, since it works by audio detecting "the click" when the patient selects its insulin dose, its precision and accuracy is not 100% and surely much lower than Mallya's.

It is unclear whether it has a CE mark and is not FDA approved. The cap costs about EUR40.

Fig. 20: Clipsulin from Diabnext



Source: Diabnext

NOVO NORDISK: A SHY MARKET ENTRY

As seen above, Novo Nordisk should launch a reusable connected pen this year in some European countries but is also developing a cap. During its Capital MarketS Day in November last year, Novo indicated that the development of this cap had been delayed but provided no details on the new schedule or prospective launch date.

Fig. 21: What Novo-Nordisk is working on

- Novo Nordisk expects to offer both a connected durable device and a smart add-on device for prefilled pens



Connected durable device



Smart add-on cap

Source: Novo-Nordisk

In addition, it remains to be seen if this add-on cap will be developed for Novo pens only or if it will be "universal" like Mallya.

To summarise, it is fair to say that competition is intense but no real threat, with the only potential serious competitor likely to be Novo Nordisk if it is successful with its add-on cap. In addition, unlike most of the smaller players we describe above, Mallya will benefit from the agreement with Sanofi and some other big players for its distribution (Roche and Agamatrix).

A first agreement signed with Sanofi

Biocorp started discussions with Sanofi in July 2019 and in December 2019 signed a long-term agreement by which Sanofi obtained non-exclusive rights to market Mallya on a worldwide basis. Meanwhile, Biocorp will develop a new specific and exclusive version of Mallya for Sanofi's SoloStar insulin pen.

Regarding the financial terms of this agreement, Biocorp received a total of about EUR20m for development of the different versions of Mallya to be split over the 2019-2021 period. EUR7m was already paid to Biocorp in 2019 and 2020. We estimate that the remaining EUR13m should be equally split between 2020 and 2021.

In addition to these payments, Biocorp will sell the Mallya system to Sanofi, which will be in charge of its distribution.

Since Mallya should be reimbursed by private or public payers through this distribution channel, we believe that the vast majority of volumes (80%) will be sold through the agreement with Sanofi.

This also implies that the official commercial launch of Mallya should take place in 2020.

A second agreement with Agamatrix

As explained above, Agamatrix manufactures glucose meters and sells its devices to drugstore chains and on the web.

The agreement signed in February 2019 between the two groups gave Agamatrix a non-exclusive license to distribute Mallya in Europe (including the UK) and the US for diabetes usage. In addition, Agamatrix has the exclusive license to distribute Mallya under white label in the US.

No financial terms were disclosed regarding this agreement, but Biocorp estimates that it could generate up to EUR20m in sales over the next five years.

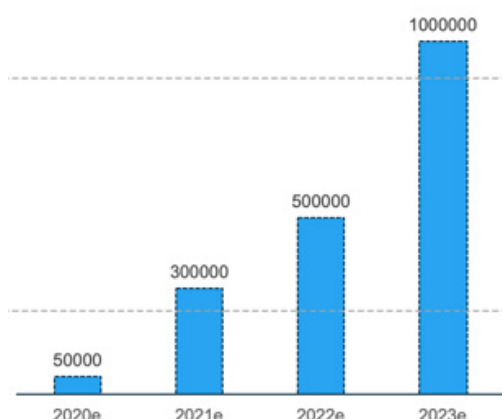
However, since the system will not be reimbursed, we expect it will capture the minority shares of volumes, at 20%, compared with the agreement with Sanofi.

Sales potential of about EUR100m

Although the first sales of Mallya are set to stem from diabetes usage, it could also be used in other therapeutic areas in the future such as growth hormones and infertility. In infertility issues, women need to be reassured that the injections have been done properly since the subject is very sensitive for them and also because the drugs are very expensive. The same goes for growth hormones where it could be more than useful for parents to make sure their children have done their injections correctly to get the full benefit from the treatment.

According to Biocorp, the number of Mallya units sold could reach one million in 2023 (Fig.22), in diabetes alone.

Fig. 22: Biocorp Mallya units sold estimates



Source: Biocorp

To assess the sales potential of Mallya, we have assumed the following:

1. An initial number of pen users of 55 million among diabetics in 2020 growing 7% per year (the number of diabetics is expected to grow at 9% per year CAGR);
2. A penetration rate of Mallya in this population growing to a peak of 3% in 2026 and falling thereafter. We have assumed that after 2026, competition should be more intense with new players entering the market and/or the arrival of new technologies. In addition, diabetes drugs from Sanofi (mainly Lantus and Toujeo) will continue to decline during this period.
3. A price of Mallya when sold to partners like Sanofi, Roche or Agamatrix of EUR40. We used the price of rival systems as a benchmark.

Fig. 23: Worldwide sales forecasts for Mallya

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Number of pen users (WW in million)	55	59	63	67	72	77	83	88	95	101	108
annual growth rate		7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Mallya penetration rate	0.1%	0.7%	1.4%	2.0%	2.4%	2.8%	3.0%	2.2%	1.5%	1.0%	0.5%
Number of Mallya system sold	55,000	400,180	881,573	1,347,547	1,730,251	2,159,930	2,476,205	1,942,996	1,417,504	1,011,153	540,967
Mallya Price (EUR)	40										
Sales (EURm)	02	16	35	54	69	86	99	78	57	40	22

Part 4: Rest of the business

While Mallya is the central piece of Biocorp's future business, the company has also developed other equipment, which may contribute to its revenue growth.

Datapen, a motor-driven injection pen

This product is under development and should not be on the market for two years. Biocorp is in discussions with several potential partners.

Because of the high viscosity of certain drugs or large volume injections, they often require either the application of a strong force or long injection times, and therefore motorized auto-injectors are often preferred over manual syringes.

The Datapen is particularly suitable for double chamber cartridges where the lyophilised drug is in one chamber and the liquid for reconstitution in another chamber, separated by a plug.

The Datapen is also a connected pen but Biocorp stopped its development in diabetes since COGS was too high and is now focused on rare diseases and hormones like growth hormones.

Merck Serono has developed the easypod to inject its growth hormone Saizen. However, easypod is dedicated to one product and is not the easiest autoinjector to use.

Regarding cartridges with double chambers, Ypsomed markets the LyoTwist. The device requires manipulations by the patient prior to the injection, which could be a cause of failure and the pen is also not connected.

The advantage of the Datapen is that: 1/it is connected, 2/ it is easy to use without complicated manipulations before the injection.

Fig. 24: Datapen (left), easypod (centre) and LyoTwist (right)



Source: Companies

Injay, the connected syringe at reasonable cost

Injay is a connected system that can be adapted to all classic prefilled syringes.

Fig. 25: Injay system



Source: Biocorp

Injay can display the type of drug, the concentration, the batch number and the expiry date. It could be particularly useful for clinical trials and databases as for electronic health records.

It does not require any additional capex for the pharmaceutical company using Injay to replace the standard piston and back stop. The additional cost is less than EUR0.50.

In terms of health authorities, it is also very simple since it is a component of the syringe and not of the drug itself.

Our understanding is that Biocorp is in discussions with a pharmaceutical company which would like to use Injay in a clinical trial.

We do not have sales forecast for Injay in our model for the time being.

Part 5: Valuation: significant upside

Our valuation is primarily derived from a DCF valuation. The main asset driving this valuation is clearly Mallya.

DCF valuation: EUR25/share

Our DCF valuation is based on the following assumptions:

- Forecasts from our model out to 2030 followed by an estimate thereafter for a 15% sales decline mainly due to the decline in Mallya. We assume that the "traditional" pharmaceutical device division should continue to deliver around EUR2m in sales over the long term.
- We apply a PoS of 70% to our Mallya sales forecast pending confirmation of the commercial model and since our forecast is dependent on additional distribution agreements to be signed (with Novo Nordisk or Eli Lilly for instance).
- Gross margin of 75% and globally flat operating expenses since Biocorp does not commercialise the device itself (therefore, no sales and marketing costs). Capex is more related to maintenance since the group has already invested in a new factory (capacity of about 3.5 million Mallya devices).
- We apply a WACC of 13%.

Fig. 26: Biocorp DCF assumptions

	2020e	2021e	2022e	2023e	2024e	2025e
Total revenue	10	24	35	50	62	76
Change %		11%	129%	48%	43%	25%
Operating profit	1	11	18	29	38	48
Margin in %	7%	46%	52%	58%	61%	64%
Tax	0	-2	-4	-6	-8	-10
Change in WCR	-1,0	-1,1	-0,8	-1,3	-1,1	-1,2
Capex net	0	-1	-1	-2	-2	-3
Net flow	-1	6	11	19	26	33
Sum of discounted DCF	106					

Source: Bryan, Garnier & Co estimates

Sum of discounted cash flows	106
+Financial assets	0
-Provisions	0
-Net Debt	-2
-Minorities	0
Equity value	104
Number of shares	4.15
Valuation/share (EUR)	25

Source: Bryan, Garnier & Co estimates

Peer comparison: EUR26/share

Although there is no real listed company comparable to Biocorp, we have tried to find some with fairly similar businesses.

Fig. 27: EV/Sales multiple of some listed companies with business close to Biocorp

		EV/Sales 2020	EV/Sales 2021
Livango	Digital health management for chronic conditions	11x	7x
iRhythm	Ambulatory cardiac monitoring	10x	7x
Ypsomed	Injection systems for self medication	4,5x	4x
Average		8,3x	6x

Source: Bryan, Garnier & Co estimates

Applying these multiples to Biocorp sales, we derive a valuation of EUR20.5/share in 2020 and EUR33/share in 2021.

The average comes in at EUR26/share.

Speculative appeal that should not be forgotten

The company's founder and major shareholder, either directly or through his holding BIO JAG (which owns 48% of the company), Jacques Gardette, is 72 years old and none of his children work at the company. Mr Gardette has also made a similar move in the past when he sold off Biodome, which he created a few years earlier, in 2000.

In terms of players that might be interested in buying the company, we think of large diabetes players but also groups such as Becton Dickinson, which would mostly be interested in Mallya and would probably sell off the remaining businesses.

Bryan Garnier stock rating system

For the purposes of this Report, the Bryan Garnier stock rating system is defined as follows:

Stock rating

BUY	Positive opinion for a stock where we expect a favourable performance in absolute terms over a period of 6 months from the publication of a recommendation. This opinion is based not only on the FV (the potential upside based on valuation), but also takes into account a number of elements that could include a SWOT analysis, momentum, technical aspects or the sector backdrop. Every subsequent published update on the stock will feature an introduction outlining the key reasons behind the opinion.
NEUTRAL	Opinion recommending not to trade in a stock short-term, neither as a BUYER or a SELLER, due to a specific set of factors. This view is intended to be temporary. It may reflect different situations, but in particular those where a fair value shows no significant potential or where an upcoming binary event constitutes a high-risk that is difficult to quantify. Every subsequent published update on the stock will feature an introduction outlining the key reasons behind the opinion.
SELL	Negative opinion for a stock where we expect an unfavourable performance in absolute terms over a period of 6 months from the publication of a recommendation. This opinion is based not only on the FV (the potential downside based on valuation), but also takes into account a number of elements that could include a SWOT analysis, momentum, technical aspects or the sector backdrop. Every subsequent published update on the stock will feature an introduction outlining the key reasons behind the opinion.

Distribution of stock ratings

BUY ratings 48%

NEUTRAL ratings 44.4%

SELL ratings 7.6%

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