UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 6-K

REPORT OF FOREIGN PRIVATE ISSUER PURSUANT TO SECTION 13a-16 OR 15d-16 UNDER THE SECURITIES EXCHANGE ACT OF 1934

For the month of September, 2020

Commission File Number: 001-36815

Ascendis Pharma A/S

(Exact Name of Registrant as Specified in Its Charter)

Tuborg Boulevard 12 DK-2900 Hellerup Denmark (Address of principal executive offices)

Indicate by check mark whether the registrant files or will file annual reports under cover of Form 20-F or Form 40-F.

Form 20-F ⊠ Form 40-F □

Indicate by check mark if the registrant is submitting the Form 6-K in paper as permitted by Regulation S-T Rule 101(b)(1):

Indicate by check mark if the registrant is submitting the Form 6-K in paper as permitted by Regulation S-T Rule 101(b)(7):

Spokespersons of Ascendis Pharma A/S (the "Company") presented the information in the presentation slides attached hereto as Exhibit 99.1 in a webcast on September 29, 2020.

The furnishing of the attached presentation is not an admission as to the materiality of any information therein. The information contained in the presentation is summary information that is intended to be considered in the context of more complete information included in the Company's filings with the Securities and Exchange Commission (the "SEC") and other public announcements that the Company has made and may make from time to time. The Company undertakes no duty or obligation to update or revise the information contained in this report, although it may do so from time to time as its management believes is appropriate. Any such updating may be made through the filing or furnishing of other reports or documents with the SEC or through other public disclosures.

Exhibits

99.1 Company Presentation

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Ascendis Pharma A/S

Date: September 29, 2020

By: /s/ Michael Wolff Jensen Michael Wolff Jensen Chairman and Senior Vice President, Chief Legal Officer



TransCon[™] PTH

Clinical Development Update

September 29, 2020

Cautionary Note On Forward-Looking Statements

This presentation contains forward-looking statements. All statements other than statements of historical facts contained in this presentation, such as statements regarding our future results of operations and financial position, including our business strategy, prospective products, availability of funding, clinical trial results, product approvals and regulatory pathways, collaborations, licensing or other arrangements, the scope, progress, results and costs of developing our product candidates or any other future product candidates, the potential market size and size of the potential patient populations for our product candidates, timing and likelihood of success, plans and objectives of management for future operations, the scope of protection we are able to establish and maintain for intellectual property rights covering our product candidates, and future results of current and anticipated products, are forward-looking statements. These forward-looking statements are based on our current expectations and beliefs, as well as assumptions concerning future events. These statements involve known and unknown risks, uncertainties and other factors that could cause our actual results to differ materially from the results discussed in the forward-looking statements. These risks, uncertainties and other factors are more fully described in our reports filed with the SEC on April 3, 2020 particularly in the sections titled "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations". In light of the significant uncertainties in our forward-looking statements, you should not place undue reliance on these statements or regard these statements as a representation or warranty by us or any other person that we will achieve our objectives and plans in any specified timeframe, or at all.

Any forward-looking statement made by us in this presentation speaks only as of the date of this presentation and represents our estimates and assumptions only as of the date of this presentation. Except as required by law, we assume no obligation to update these statements publicly, whether as a result of new information, future events, changed circumstances or otherwise after the date of this presentation.

This presentation concerns product candidates that are or have been under clinical investigation and which have not yet been approved for marketing by the U.S. Food and Drug Administration, European Medicines Agency or other foreign regulatory authorities. These product candidates are currently limited by U.S. Federal law to investigational use, and no representations are made as to their safety or effectiveness for the purposes for which they are being investigated.

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TransCon PTH Overview

- Preliminary PaTH Forward OLE data at month 6 support TransCon PTH as a potential hormone replacement therapy for adult HP
 - Eliminated standard of care¹ with a well-tolerated once daily injection
 - Normalized mean SF-36 quality-of-life scores on all summary and subdomains
 - Normalized mean 24-hour urine calcium, a key marker of long-term safety
- IND amendment filed for phase 3 PaTHway Trial of TransCon PTH compared to placebo; European filings in preparation
 - Based on feedback from U.S. and European regulatory authorities
 - Randomized, double-blind, placebo-controlled trial of 76 adults with chronic hypoparathyroidism randomized 3:1 (TransCon PTH:placebo) with an open-label extension period
 - Well-powered to achieve primary composite endpoint of proportion of subjects with: (1) serum calcium in the normal range, and (2) independence from active vitamin D, and (3) calcium supplement dose ≤600 mg/day
- Conclusions
 - TransCon PTH was well-tolerated during 6 months of treatment with no treatment-related serious or severe TEAEs
 - TransCon PTH demonstrated ability to eliminate standard of care, reduce 24-hour urine calcium and maintain serum calcium well into the normal range at 6 months
 - 86% of PaTH Forward OLE subjects had (1) normal serum calcium, and (2) were not taking active vitamin D, and (3) were taking ≤600 mg of calcium per day at 6 months

Preliminary PaTH Forward OLE 6-month data. 3 1 Not taking active vitamin D and taking ≤500 mg/day of calcium supplements



Preliminary PaTH Forward Open-Label Extension (OLE) Data at Month 6

- TransCon PTH eliminated standard of care¹ in 91% of subjects
- TransCon PTH demonstrated significant reduction in urinary calcium
 - 86% of subjects had 24-hour urine calcium in the normal range or 50% reduction from baseline
 - Mean 24-hour urine calcium fell by 57% from 415 mg at baseline in all groups to 178 mg after 6 months
- TransCon PTH demonstrated normalization of quality of life as measured by mean SF-36 scores
- TransCon PTH demonstrated a strong response on composite endpoints
 - 71% of subjects responded to composite of (1) normal serum calcium, (2) off vitamin D, (3) taking ≤500 mg calcium, and (4) 24-hour urine calcium in the normal range or 50% reduction from baseline
 - 86% of subjects (1) had normal serum calcium, (2) were off vitamin D, and (3) were taking ≤600 mg calcium
- All doses of TransCon PTH were well-tolerated
 - No treatment-related serious or severe adverse events occurred, and no treatment-emergent adverse events (TEAEs) led to
 discontinuation of study drug
 - No new safety signals identified in the open label extension portion of the study
- 58 subjects continue in open-label extension beyond 6 months

Preliminary PaTH Forward OLE data at 6 months support TransCon PTH as a potential hormone replacement therapy for adult HP

4	Preliminary PaTH Forward OLE 6-month data. ¹Not taking active vitamin D and taking ≲500 mg/day of calcium supplements	All product candidates are investigational. For investor communication only. Not for use in promotion or product commercialisation.	oharma	Ì
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TransCon PTH Phase 2 Trial D	esign		
POTHFORWORD TRIAL 59 adult subjects wit	HP currently receiving standard ve vitamin D + calcium)		
Double-Blinded Treatment (4 weeks)	Open-Label Extension		
Screening ≤4 weeks 000 TransCon PTH 15 μg/day TransCon PTH 18 μg/day	TransCon PTH Titration & Individualiz	zed Dosing	
Placebo	TransCon PTH Individual Dosing (6–30 μg/	day)	
Primary Composite Endpoint (4 weeks)	Key Secondary Endpoints (4 weeks)		
Proportion of subjects with:	 Primary composite and taking ≤500 mg/day calcium 		
 Normal serum calcium; and 	Additional Endpoints ≥4 weeks		
 Normal FECa (or at least 50% decrease from baseline); and 	 PRO measures (including HPES and SF-36) 		
 Off active vitamin D; and 	 Nephrolithiasis, nephrocalcinosis, vascular calcification, ER/urgent care visits and hospitalizations 		
 Taking ≤1,000 mg/day calcium 	 BMD and TBS by DXA, bone turnover markers, 24-hour urine excretion (in extension only) 	calcium	
PRO = Patient-reported Outcome. HPES = Hypoparathyroidism Patient Experience Scale. BMD = Bone Mineral Density. TBS =Trabecular Bone Score. DXA = Dual-Energy X-Ray Absorptiometry. FECa = Fractional Excretion of Calcium.	All product candidates are investigational. For investor communication ascentiation.	arma 🗾	



	Total (N=59)
Age (years) (n)	59
Mean (SD)	50 (12)
Age Group (years) – n (%)	
<30	3 (5)
≥30 - <65	51 (86)
≥65	5 (9)
Sex at Birth n (%)	
Female	48 (81)
Body Mass Index (kg/m²) (n)	59
Mean (SD)	28 (4)
Menopausal Status – n (%)	48
Postmenopausal	17 (35)

6 Preliminary PaTH Forward OLE 6-month data.





	Total (N=59)
Race – n (%)	
American Indian or Alaska Native	0
Asian	2 (3)
Black or African American	0
Native Hawaiian or Other Pacific Islander	0
White	54 (92)
Unknown	0
Other	3 (5)
Geographic Region – n (%)	
North America	38 (64)
Europe	21 (36)

7 Preliminary PaTH Forward OLE 6-month data.



PaTH Forward HP Disease Characteristics and History



	Total (N=59)
Cause of Hypoparathyroidism (HP)	
Acquired from neck surgery	47
Autoimmune disease	1
Idiopathic disease	11
Duration of HP (Years)	
Mean	12
Min, Max	1, 39
Renal Insufficiency History	5
Kidney Stones History	8
Ectopic Calcifications History	1
Vascular Calcifications History	0
Brain Calcification History	0
Cataract History	0
Seizure History	2

8 Preliminary PaTH Forward OLE 6-month data.



PaTH Forward Baseline HP Supplements

HP Supplements at Baseline collected by eDiary/Total Daily Dose (TDD)	Total (N=59)
Calcium /TDD (mg) (n)	59
Mean	2079
Min, Max	500, 8000
Calcium Category, n (%)	
≤2000 mg TDD	37 (63)
>2000 mg TDD	22 (37)
Calcitriol (Active Vitamin D) /TDD (µg) (n)	45
Mean	0.794
Min, Max	0.25, 3.00
Alfacalcidol (Active Vitamin D) /TDD (µg) (n)	13
Mean	2.38
Min, Max	1.0, 4.0

Preliminary PaTH Forward OLE 6-month data. 9 2 subjects did not have eDiary information confirmed by prescription information.

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Pathforward

PaTH Forward Baseline of Spot FECa & Albumin-Adjusted sCa



Lab Summary at Baseline	Total (N=59)
Albumin-Adjusted sCa (mg/dL) (n)	59
Mean (SD)	8.8 (0.80)
Spot AM FECa (%) (n)	59
Mean (SD)	2.6 (1.3)
Spot AM FECa normal (≤2%) baseline, n (%)	25 (42)

10 Preliminary PaTH Forward OLE 6-month data.



PaTH Forward OLE Overall TEAE Summary



	TransCon PTH/ TransCon PTH (N=44)	Placebo/ TransCon PTH (N=15)	All TransCon PTH (N=59)
Subjects With – n (%)			
Treatment-Emergent Adverse Events (TEAE)	27 (61)	10 (67)	37 (63)
Serious TEAE	0	2 (13)	2 (3.4)
Severity			
Severe TEAE	0	1 (6.7)	1 (1.7)
Moderate TEAE	6 (14)	3 (20)	9 (15)
Mild TEAE	21 (48)	6 (40)	27 (46)
Related TEAE	10 (23)	4 (27)	14 (24)
Serious Related TEAE	0	0	0
TEAE Related to Hyper- or Hypocalcemia Leading to ER/Urgent Care Visit and/or Hospitalization	0	0	0
TEAE Leading to Discontinuation of Study Drug	0	0	0
TEAE Leading to Discontinuation of Trial	0	0	0
TEAE Leading to Death	0	0	0

Preliminary PaTH Forward OLE 6-month data. Percentages are calculated based on the number of subjects in the Safety Population. In the severity categories, subjects are displayed for the highest severity only. An AE is considered a TEAE if it occurred after the first dose of TransCon PTH. 11



Preliminary PaTH Forward OLE Safety Summary



- TransCon PTH was well-tolerated
- 58 subjects continue in open label extension beyond 6 months
- No drug-related serious TEAEs were reported •
- No TEAEs leading to discontinuation of study drug •
- TEAEs with TransCon PTH reflect known PTH pharmacology 4
- Injections were well-tolerated using pen injector planned for commercial presentation 4
- No new safety signals identified in the open label extension portion of the study

No subjects had PTH treatment-emergent adverse events related to Hyper- or Hypocalcemia leading to ER/urgent care visit and/or hospitalization

12 Preliminary PaTH Forward OLE 6-month data



PaTH Forward OLE Distribution of Doses at Month 6





mean of 18 µg/day

13 Preliminary PaTH Forward OLE 6-month data.

PaTH Forward OLE Overall Compliance with Dosing



	TransCon PTH (n=44)	Placebo/TransCon (n=15)	All TransCon PTH (n=59)
Compliance (%)			
Mean	99.7	99.8	99.7
SD, SE	10.6, 0.16	0.39, 0.10	0.94, 0.12
Median	100.0	100.0	100.0
Min, Max	93,100	99,100	93,100
Compliance with dosing			
≤80%	0	0	0
>80% to ≤90%	0	0	0
>90%	100%	100%	100%

Overall compliance with once-daily TransCon PTH was almost 100%

Preliminary PaTH Forward OLE 6-month data. Study drug compliance is calculated as: (Total number of actual TransCon PTH doses/total number of planned doses)* 100. 14



PaTH Forward OLE Elimination of Standard of Care at Month 6

Number of Subjects Meeting Each Component	TransCon PTH/TransCon PTH (N=44)	Placebo/TransCon PTH (n=15)	All TransCon PTH (N=59)
The number of subjects reached 6 month visit	44	14	58
Active vitamin D = 0 mcg day	44 (100%)	14 (100%)	58 (100%)
Calcium ≤1000 mg/day	41 (93%)	14 (100%)	55 (95%)
Calcium ≤500 mg/day	40 (91%)	13 (93%)	53 (91%)
Calcium = 0 mg/day	33 (75%)	11 (79%)	44 (76%)
Active vitamin D = 0 <i>and</i> Calcium = 0 mg/day	33 (75%)	11 (79%)	44 (76%)
Active vitamin D = 0 and Calcium ≤500 mg/day	40 (91%)	13 (93%)	53 (91%)

The percentages are calculated based on the number of subjects with 6-month visit.

9 out of 10 subjects were able to eliminate standard of care* 8 of 10 subjects were able to eliminate all supplements

Preliminary PaTH Forward OLE 6-month data *Not taking active vitamin D and ≤500 mg/day of calcium supplements 15

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Pathforward

PaTH Forward OLE Mean Active Vitamin D Dose





TransCon PTH enabled discontinuation of active vitamin D within two weeks of treatment initiation

16 Preliminary PaTH Forward OLE 6-month data

PaTH Forward OLE Mean Calcium Supplement Dose





TransCon PTH enabled rapid and continuous calcium supplement reduction over 6-month study period

17 Preliminary PaTH Forward OLE 6-month data.

PaTH Forward OLE Mean Serum Calcium and Mean 24-Hour Urine Calcium

Mean Serum Calcium





Mean 24-hour urine calcium normalized while maintaining normal mean serum calcium

18 Preliminary PaTH Forward OLE 6-month data.

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PaTH Forward OLE Mean 24-Hour Urine Calcium at Month 6



Parameter (unit) Visit Statistics	TransCon PTH/ TransCon PTH (N=44)	Placebo/ TransCon PTH (N=15)	All TransCon PTH (N=59)	
24-Hour Urine Calcium (mg/24 hr)				
Baseline – n	39	11	50	
Mean (SD)	425 (200)	440 (162)	428 (191)	
6 Month – n	36	8	44	
Baseline				
Mean (SD)	419 (198)	395 (148)	415 (189)	
Observed				
Mean (SD)	167 (98)	226 (107)	178 (101)	
Change from Baseline				
Mean (SD)	-252 (200)	-169 (194)	-237 (199)	
At each post-baseline visit, only data from subjects with both baseline and the corresponding visit values available are used to compute the statistical summaries				

Mean 24-hour urine calcium decreased 57% while maintaining normal mean serum calcium

19 Preliminary PaTH Forward OLE 6-month data

PaTH Forward OLE Mean Spot AM FECa at Month 6



Parameter (unit) Visit Statistics	TransCon PTH/ TransCon PTH (N=44)	Placebo/ TransCon PTH (N=15)	All TransCon PTH (N=59)
Spot AM FECa (%)			
Baseline – n	44	15	59
Mean (SD)	2.8 (1.4)	2.2 (0.8)	2.6 (1.3)
6 Month – n	33	9	42
Baseline			
Mean (SD)	2.9 (1.4)	2.5 (0.7)	2.8 (1.3)
Observed			
Mean (SD)	1.5 (1.0)	1.5 (0.6)	1.5 (1.0)
Change from Baseline			
Mean (SD)	-1.4 (1.5)	-0.9 (0.9)	-1.3 (1.4)

Mean spot AM FECa decreased while maintaining normal mean serum calcium

Preliminary PaTH Forward OLE 6-month data. At each post-baseline visit, only data from subjects with both baseline and the corresponding visit values available are used to compute the statistical summaries. 20



PaTH Forward OLE 10 Subjects without Complete Composite Endpoint at Month 6

- One subject (randomized to placebo) withdrew for reasons unrelated to safety or ۰ efficacy of the study drug
- Four subjects excluded due to 24-hour urine sampling out of window (day 169-210):
 - All four subjects were off active vitamin D and ≤500 mg of calcium supplements
 - Three of four had normal 24-hour urine calcium and normal serum calcium
- Three 24-hour urine samples not prepared properly; redo samples were outside of 0 window and were not received by data cutoff
- Two 24-hour urine samples were not received by laboratory 0

21 Preliminary PaTH Forward OLE 6-month data



Proportion of Subjects Achieving Composite Endpoint at Month 6 in PaTH Forward OLE Pathforward

	TransCon PTH/ TransCon PTH (N=44)	Placebo / TransCon PTH ¹ (N=15)	All TransCon PTH (N=59)
Number of Subjects Who Have Data on All Criteria at Month 6	39	10	49
Number of Subjects Meeting The Primary Endpoint Criteria at Month 6	29	6	35
Proportion (95% CI) ²	74.4 (57.9, 87.0)	60.0 (26.2, 87.8)	71.4 (56.7, 83.4)
Number of Subjects Meeting Each Component:			
Albumin-adjusted sCa within the normal range	36	9	45
24-Hour urine calcium within normal range or ≥50% decrease from baseline	34	8	42
Not taking active vitamin D supplements	39	10	49
Taking ≤500 mg/day of calcium supplements	35	9	44

35 subjects met all criteria for response, and 14 subjects demonstrated partial response

Preliminary PaTH Forward OLE 6-month data. ¹Subjects in this group switched from placebo at 4 weeks to TransCon PTH for the open-label portion of the trial. ²Percentage is based on the number of subjects who have data on all criteria at Month 6. The normal range for albumin-adjusted sCa is 8.3-10.6 mg/dL (2.07-2.64 mmol/L). The normal range for 24-hour urine calcium is defined as \$250 mg/day for female, \$300 mg/day for male. 22



PaTH Forward OLE Partial Responder Analysis at Month 6



	Albumin-adjusted sCa	24-Hour Urine Calcium	Calcium Dose	Active Vitamin D Dose	TransCon PTH Dose
Partial Responder	mg/dL	mg	mg/day	µg/day	µg/day
Subject 1	9.5	256	0	0	18
Subject 2	9.3	196	600	0	15
Subject 3	9.3	307	0	0	21
Subject 4	8.4	441	3000	0	30
Subject 5	8.3	63	4000	0	30
Subject 6	8.2	35	70	0	18
Subject 7	9.4	269	0	0	18
Subject 8	9.32	288	0	0	15
Subject 9	8.92	422	500	0	18
Subject 10	8.48	79	2400	0	18
Subject 11	8.02	71	800	0	21
Subject 12	7.96	67	0	0	18
Subject 13	9.28	449	0	0	18
Subject 14	8.2	63	250	0	21

All 14 partial responders met two or more response criteria¹ and 12 met three

Preliminary PaTH Forward OLE 6-month data. Green = meet response criteria. ¹ Response criteria are normal serum calcium, off vitamin D, taking ≤500 mg calcium, and 24-hour urine calcium in the normal range or 50% reduction from baseline. 23



PaTH Forward OLE Mean Serum Phosphate





24 Preliminary PaTH Forward OLE 6-month data.

PaTH Forward OLE Mean Serum Calcium-Serum Phosphate Product





25 Preliminary PaTH Forward OLE 6-month data.

PaTH Forward OLE Change in SF-36[®] Health Survey Domain Mean Scores (SD)

	Plac (n=	cebo 15)	Placebo Switch to TransCon PTH (n=15)	TransCon PTH (n=44)		All TransCon PTH (n=59)		
SF-36 domain*	Baseline	Week 4	6 Months	Baseline	Week 4	6 Months	Baseline	6 Months
PF	45 (11)	46 (14)	51 (7)	46 (9)	51 (6)	52 (5)	46 (10)	51 (6)
RP	42 (10)	42 (14)	49 (11)	42 (10)	49 (8)	51 (6)	42 (10)	50 (7)
BP	43 (11)	40 (16)	46 (10)	46 (10)	49 (8)	51 (9)	45 (10)	50 (9)
GH	44 (10)	47 (11)	50 (7)	43 (10)	47 (8)	51 (9)	43 (10)	51 (8)
VT	44 (12)	43 (12)	52 (10)	42 (11)	49 (9)	53 (8)	43 (11)	53 (8)
SF	44 (11)	41 (15)	53 (5)	42 (10)	50 (8)	52 (6)	43 (10)	52 (6)
RE	45 (12)	39 (16)	51 (7)	42 (13)	49 (10)	50 (8)	43 (13)	50 (7)
MH	47 (9)	47 (11)	55 (5)	46 (9)	51 (8)	51 (8)	46 (9)	52 (7)
PCS	43 (12)	44 (14)	48 (8)	45 (10)	49 (7)	51 (7)	44 (11)	50 (8)
MCS	46 (10)	43 (12)	54 (6)	43 (11)	50 (9)	51 (8)	44 (11)	52 (8)

Preliminary PaTH Forward OLE 6-month data. Green: patients within normal range. (SD). 'PF (physical functioning), RP (role physical), BP (bodily pain), SF (social functioning), MH (mental health), RE (role emotional), VT (vitality), GH (general health), PCS (physical component summary), MCS (mental component summary). 26



PaTH Forward OLE Mean P1NP and CTx







% Change in Mean P1NP





At 6-month point, observed lower level of increase for anabolic compared to catabolic bone turnover

28 Preliminary PaTH Forward OLE 6-month data.

PaTHway Phase 3 Trial Design



¹ Enrollment increased to 76 subjects to ensure evaluable data for 68.
² If needed to meet recommended dietary intake of calcium, it is permitted to take calcium supplements ≤600 mg/day as a nutritional supplement. 29



Summary of TransCon PTH Update



- 86% of subjects had (1) normal serum calcium, (2) off active vitamin D and (3) taking ≤600 mg/day of calcium
- 71% of subjects achieved composite endpoint of (1) normal serum calcium, (2) off vitamin D, (3) taking ≤500 mg calcium, and (4) 24-hour urine calcium in the normal range or 50% reduction from baseline
- Mean scores for all summary and subdomains of SF-36 were normal for all TransCon PTH subjects at 6 months in PaTH Forward OLE
- IND amendment filed for phase 3 PaTHway Trial of TransCon PTH compared to placebo based on feedback from U.S. and European regulatory authorities
 - Randomized, double-blind, placebo-controlled trial of 76 adults (to ensure 68 evaluable subjects) with chronic hypoparathyroidism randomized 3:1 (TransCon PTH:placebo) with an open-label extension period
 - Primary composite endpoint of proportion of subjects with: (1) normal serum calcium, (2) off active vitamin D, and (3) taking ≤600 mg/day of calcium
- Regulatory filing to initiate European sites in phase 3 planned for later this year

30 *Preliminary PaTH Forward OLE 6-month data.

