

## Supplementary Online Content

He H, Yu Y, Liew Z, et al. Association of maternal autoimmune diseases with risk of mental disorders in offspring in Denmark. *JAMA Netw Open*. 2022;5(4):e227503. doi:10.1001/jamanetworkopen.2022.7503

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This supplementary material has been provided by the authors to give readers additional information about their work.

**eTable 1. Diagnostic classification of autoimmune diseases considered according to the ICD-10 and equivalent ICD-8 diagnoses.**

| Diagnoses of ADs                          | ICD8                   | ICD10          |
|---|------------------------|----------------|
| Endocrine autoimmune diseases             |                        |                |
| Type 1 Diabetes                           | 249                    | E10            |
| Thyreotoxicosis                           | 242.00                 | E05.0          |
| Autoimmune thyroiditis                    | 245.03                 | E06.3          |
| Primary adrenocortical insufficiency      | 255.1                  | E27.1          |
| Connective tissue autoimmune diseases     |                        |                |
| Rheumatoid arthritis                      | 712.19, 712.39, 712.59 | M05–M06        |
| Juvenile arthritis                        | 712.09                 | M08            |
| Dermatopolymyositis                       | 716                    | M33            |
| Polymyalgia rheumatica/temporal arteritis | 446.30–31, 446.39      | M31.5–6, M35.3 |
| Scleroderma                               | 734.0                  | M34            |
| Systemic lupus erythematosus              | 734.19                 | M32.1, M32.9   |
| Sjögren syndrome                          | 734.90                 | M35.0          |
| Ankylosing Spondylitis                    | 712.49                 | M45            |
| Wegener granulomatosis                    | 446.29                 | M31.3          |
| Gastrointestinal autoimmune diseases      |                        |                |
| Celiac disease                            | 269.00                 | K90.0          |
| Crohn disease                             | 563.01                 | K50            |
| Ulcerative colitis                        | 563.19                 | K51            |
| Primary biliary cirrhosis                 | 571.90                 | K74.3          |
| Autoimmune hepatitis                      | 571.93                 | K73            |
| Blood autoimmune diseases                 |                        |                |
| Pernicious anemia                         | 281.0                  | D51.0          |
| Autoimmune hemolytic anemia               | 283.90–91              | D59.1          |
| Idiopathic thrombocytopenic purpura       | 446.49, 287.10         | D69.3          |
| Nervous system autoimmune diseases        |                        |                |
| Multiple sclerosis                        | 340                    | G35            |
| Guillain-Barré syndrome                   | 354                    | G61.0          |
| Myasthenia gravis                         | 733.09                 | G70.0          |
| Skin autoimmune diseases                  |                        |                |
| Pemphigus                                 | 694 (×694.05)          | L10            |
| Pemphigoid                                | 694.05                 | L12            |
| Psoriasis vulgaris                        | 696.09–10, 696.19      | L40 (×L40.4)   |
| Alopecia areata                           | 704.00                 | L63            |
| Vitiligo                                  | 709.01                 | L80.9          |

ICD-10: International Classification of Diseases, 10th revision (1994-2016); ICD-8: Danish modification of the International Classification of Diseases, 8th revision (1978-1993)

eTable 2. **Diagnostic classification of mental disorders considered according to the ICD-10 and equivalent ICD-8 diagnoses.**

| Diagnoses  | Abbreviated name        | ICD-8  | ICD-10     | Earliest possible age at onset (years) |
|--|-------------------------|--|------------|--|
| <b>Any mental disorder</b>   | Any mental disorder     | 290 – 315  | F00 – F99  | 1                                      |
| <b>Organic, including symptomatic, mental disorders</b><br><i>Includes dementia in Alzheimer’s disease, vascular dementia, etc.</i>  | Organic disorders       | 290.09, 290.10, 290.11, 290.18, 290.19, 292.x9, 293.x9, 294.x9, 309.x9 | F00 – F09  | 1                                      |
| <b>Mental and behavioral disorders due to psychoactive substance use</b><br><i>Includes use of alcohol, cannabis, cocaine, nicotine, opioids, sedatives, hypnotics, anxiolytics, etc.</i>                              | Substance use disorders | 291.x9, 294.39, 303.x9, 303.20, 303.28, 303.90, 304.x9                 | F10 – F19  | 10                                     |
| <b>Schizophrenia and related disorders</b><br><i>Includes schizophrenia, schizotypal disorders, schizoaffective disorders and other psychotic disorders.</i>   | Schizophrenia           | 295.x9, 296.89, 297.x9, 298.29-298.99, 299.04, 299.05, 299.09, 301.83  | F20 – F29  | 10                                     |
| <b>Mood disorders</b><br><i>Includes bipolar disorder, depressive disorders, etc</i>   | Mood disorders          | 296.x9 (excluding 296.89), 298.09, 298.19, 300.49, 301.19              | F30 – F39  | 10                                     |
| <b>Neurotic, stress-related, and somatoform disorders</b><br><i>Includes anxiety disorders, phobias, obsessive compulsive disorders, etc.</i>  | Neurotic disorders      | 300.x9 (excluding 300.49), 305.x9, 305.68, 307.99                      | F40 – F48  | 5                                      |
| <b>Obsessive-compulsive disorder</b>   | OCD                     | 300.39   | F42        | 5                                      |
| <b>Eating disorders</b><br><i>Includes anorexia nervosa, bulimia nervosa, etc.</i>   | Eating disorders        | 305.60, 306.50, 306.58, 306.59   | F50        | 1                                      |
| <b>Personality disorders</b>   | Personality disorders   | 301, 302   | F60–F69    | 10                                     |
| <b>Intellectual disability</b>   | Intellectual disability | 311.xx, 312.xx, 313.xx, 314.xx, 315.xx                                 | F70 – F79  | 1                                      |
| <b>Pervasive developmental disorders</b><br><i>Includes autism spectrum disorder</i>   | Developmental disorders | 299.00, 299.01, 299.02, 299.03   | F84        | 1                                      |
| <b>Childhood autism</b>  | Childhood autism        | 299.00   | F84.0      | 1                                      |
| <b>Behavioral and emotional disorders with onset usually occurring in childhood and adolescence</b><br><i>Includes attention-deficit hyperactivity disorder, conduct disorders, childhood emotional disorders, etc</i> | Behavioral disorders    | 306.x9, 308.0x   | F90 – F98  | 1                                      |
| <b>Attention Deficit Hyperactivity Disorder</b>  | ADHD                    | 308.01   | F90, F98.8 | 3                                      |
| <b>Oppositional defiant disorder/conduct disorder</b>  | ODD/CD                  | 308.03, 308.04   | F90.1, F91 | 3                                      |

ICD-10: International Classification of Diseases, 10th revision (1994-2016); ICD-8: Danish modification of the International Classification of Diseases, 8th revision (1978-1993)

**eTable 3. Anatomical Therapeutic Chemical (ATC) codes for autoimmune disease and mental disorders medications.**

| <b>Medications</b>         | <b>ATC</b>       |
|----------------------------|------------------|
| <b>Autoimmune diseases</b> |                  |
| NSAIDS                     | M01A             |
| DMARDS                     |                  |
| Azathioprine               | L04AX01          |
| Cyclophosphamide           | L01AA01          |
| Cyclosporine               | L04AD01          |
| Hydroxychloroquine         | P01BA02          |
| Leflunomide                | L04AA13          |
| Methotrexate               | L01BA01, L04AX03 |
| Mycophenolate mofetil      | L04AA06          |
| Sulfasalazine              | A07EC01          |
| TNF- $\alpha$ antagonists  | L04AB            |
| Systemic glucocorticoids   | H02AB            |
| Topical glucocorticoids    | D07              |
| Antipsoriatics             | D05              |
| Tofacitinib                | L04AA29          |
| Rituxumab                  | L01FA01          |
| Pilocarpine                | S01EB01          |
| Insulin                    | A10A             |
| Anticholinesterases        | N07AA            |
| Thyroid preparations       | H03A             |
| <b>Mental disorders</b>    |                  |
| Psycholeptics              | N05              |
| Psychoanaleptics           | N06              |

eTable 4. Associations between specific maternal autoimmune diseases and risk of any mental disorder in the offspring by offspring's age

| Exposures                                    | Age of offspring at the diagnosis of the mental disorder |                                    |  |                                    |  |                                    |
|--|--|------------------------------------|--|------------------------------------|--|------------------------------------|
|  | 1-5 years  |                                    | 6-18 years                                 |                                    | >18 years                                  |                                    |
|  | No. of events (rate per 1000 person years)               | HR (95% CI), adjusted <sup>a</sup> | No. of events (rate per 1000 person years) | HR (95% CI), adjusted <sup>a</sup> | No. of events (rate per 1000 person years) | HR (95% CI), adjusted <sup>a</sup> |
| <b>Any autoimmune disease</b>                | 994 (4.55)   | 1.20 (1.13-1.28)                   | 3247 (11.38)                               | 1.16 (1.12-1.20)                   | 1219 (15.57)                               | 1.13 (1.07-1.20)                   |
| <b>Endocrine autoimmune diseases</b>         | 362 (4.59)   | 1.25 (1.13-1.39)                   | 1192 (10.93)                               | 1.17 (1.11-1.24)                   | 586 (15.78)                                | 1.17 (1.08-1.27)                   |
| Type 1 Diabetes                              | 181 (4.47)   | 1.35 (1.17-1.57)                   | 781 (10.95)                                | 1.24 (1.15-1.33)                   | 532 (15.88)                                | 1.19 (1.09-1.30)                   |
| Thyreotoxicosis                              | 138 (4.41)   | 1.08 (0.92-1.28)                   | 364 (11.19)                                | 1.08 (0.98-1.20)                   | 43 (14.57)                                 | 0.96 (0.71-1.29)                   |
| Autoimmune thyroiditis                       | 41 (5.53)  | 1.33 (0.98-1.81)                   | 50 (10.21)                                 | 1.04 (0.79-1.38)                   | 7 (26.41)                                  | 1.84 (0.88-3.86)                   |
| Primary adrenocortical insufficiency         | 10 (8.11)  | 2.10 (1.13-3.90)                   | 19 (11.74)                                 | 1.22 (0.78-1.91)                   | 6 (11.95)                                  | 0.86 (0.39-1.92)                   |
| <b>Connective tissue autoimmune diseases</b> | 166 (5.12)   | 1.28 (1.10-1.49)                   | 488 (12.78)                                | 1.24 (1.13-1.36)                   | 144 (16.97)                                | 1.21 (1.02-1.42)                   |
| Rheumatoid arthritis                         | 95 (5.54)  | 1.42 (1.16-1.74)                   | 233 (11.76)                                | 1.19 (1.05-1.36)                   | 75 (17.09)                                 | 1.28 (1.02-1.60)                   |
| Juvenile arthritis                           | 57 (6.94)  | 1.58 (1.22-2.05)                   | 113 (12.01)                                | 0.99 (0.82-1.19)                   | 33 (21.22)                                 | 1.27 (0.90-1.78)                   |
| Dermatopolymyositis                          | 0  | -                                  | 10 (9.56)                                  | 0.90 (0.48-1.67)                   | <6 (17.76)                                 | 1.36 (0.56-3.26)                   |
| Polymyalgia rheumatica/temporal arteritis    | <6 (12.94)   | 2.63 (0.85-8.16)                   | <6 (30)                                    | 2.95 (1.23-7.09)                   | 0  | -                                  |
| Scleroderma                                  | <6 (3.65)  | 0.90 (0.34-2.39)                   | 22 (17)                                    | 1.60 (1.06-2.43)                   | <6 (12.4)                                  | 0.89 (0.33-2.37)                   |
| Systemic lupus erythematosus                 | 16 (3.66)  | 0.96 (0.59-1.57)                   | 86 (15.05)                                 | 1.54 (1.25-1.90)                   | 23 (15.7)                                  | 1.13 (0.75-1.70)                   |
| Sjögren syndrome                             | <6 (3.76)  | 0.87 (0.36-2.08)                   | 21 (17.21)                                 | 1.59 (1.03-2.43)                   | <6 (5)                                     | 0.39 (0.05-2.75)                   |
| Ankylosing Spondylitis                       | 15 (4.56)  | 1.16 (0.70-1.93)                   | 37 (10.74)                                 | 1.11 (0.81-1.54)                   | 15 (17.98)                                 | 1.20 (0.72-1.99)                   |
| Wegener granulomatosis                       | <6 (4.06)  | 1.00 (0.14-7.07)                   | <6 (11.69)                                 | 1.15 (0.37-3.58)                   | 0  | -                                  |
| unexposed                                    | 30698 (3)  | 1.00 (ref)                         | 159229 (8.39)                              | 1.00 (ref)                         | 113165 (12.4)                              | 1.00 (ref)                         |

HR=Hazard Ratio, CI=Confidential Interval

<sup>a</sup>HRs were adjusted for parental psychiatric history, maternal characteristics (parity, age at birth, highest education level, cohabitation with a partner, residence, birth country) and birth characteristics (participant's sex, calendar year of birth).

eTable 4 (continued). Associations between specific maternal autoimmune diseases and risk of any mental disorder in the offspring by offspring's age.

| Exposures                                   | Age of offspring at the diagnosis of the mental disorder |                                    |  |                                    |  |                                    |
|---|--|------------------------------------|--|------------------------------------|--|------------------------------------|
|   | 1-5 years  |                                    | 6-18 years                                 |                                    | >18 years                                  |                                    |
|   | No. of events (rate per 1000 person years)               | HR (95% CI), adjusted <sup>a</sup> | No. of events (rate per 1000 person years) | HR (95% CI), adjusted <sup>a</sup> | No. of events (rate per 1000 person years) | HR (95% CI), adjusted <sup>a</sup> |
| <b>Gastrointestinal autoimmune diseases</b> | 292 (4.2)  | 1.10 (0.98-1.24)                   | 962 (11.23)                                | 1.13 (1.06-1.21)                   | 266 (14.32)                                | 1.04 (0.92-1.18)                   |
| Celiac disease                              | 26 (4.73)  | 1.13 (0.77-1.66)                   | 73 (14.17)                                 | 1.30 (1.03-1.63)                   | 7 (10.72)                                  | 0.64 (0.31-1.35)                   |
| Crohn disease                               | 104 (3.98)   | 1.00 (0.82-1.21)                   | 366 (11.43)                                | 1.07 (0.97-1.19)                   | 106 (17.36)                                | 1.17 (0.97-1.42)                   |
| Ulcerative colitis                          | 173 (3.99)   | 1.08 (0.93-1.26)                   | 558 (10.35)                                | 1.08 (1.00-1.18)                   | 163 (13.2)                                 | 1.00 (0.86-1.17)                   |
| Primary biliary cirrhosis                   | <6 (18.87)   | 4.68 (1.95-11.24)                  | 6 (23)                                     | 2.28 (1.03-5.08)                   | <6 (63.38)                                 | 4.18 (0.59-29.68)                  |
| Autoimmune hepatitis                        | 19 (8.45)  | 1.90 (1.21-2.99)                   | 42 (14.87)                                 | 1.47 (1.08-1.98)                   | 15 (20.65)                                 | 1.26 (0.76-2.10)                   |
| <b>Blood autoimmune diseases</b>            | 31 (5)   | 1.25 (0.88-1.78)                   | 79 (10.55)                                 | 1.01 (0.81-1.26)                   | 28 (19.86)                                 | 1.26 (0.87-1.82)                   |
| Pernicious anemia                           | 15 (8.74)  | 1.98 (1.20-3.29)                   | 22 (12.08)                                 | 1.08 (0.71-1.65)                   | 6 (21.17)                                  | 1.24 (0.56-2.76)                   |
| Autoimmune hemolytic anemia                 | <6 (5.82)  | 1.42 (0.46-4.40)                   | <6 (6.13)                                  | 0.59 (0.22-1.56)                   | <6 (24.49)                                 | 1.51 (0.49-4.69)                   |
| Idiopathic thrombocytopenic purpura         | 13 (3.22)  | 0.85 (0.49-1.46)                   | 55 (10.76)                                 | 1.06 (0.82-1.39)                   | 19 (18.66)                                 | 1.22 (0.78-1.91)                   |
| <b>Nervous system autoimmune diseases</b>   | 73 (4.38)  | 1.19 (0.94-1.49)                   | 272 (12.06)                                | 1.23 (1.09-1.38)                   | 89 (14.13)                                 | 1.03 (0.84-1.27)                   |
| Multiple sclerosis                          | 50 (4.15)  | 1.11 (0.84-1.47)                   | 192 (12.83)                                | 1.34 (1.16-1.54)                   | 51 (12.86)                                 | 0.96 (0.73-1.26)                   |
| Guillain-Barré syndrome                     | 18 (5.23)  | 1.44 (0.91-2.29)                   | 66 (11.33)                                 | 1.09 (0.85-1.38)                   | 32 (18.66)                                 | 1.26 (0.89-1.78)                   |
| Myasthenia gravis                           | 6 (4.53)   | 1.31 (0.59-2.92)                   | 15 (7.32)                                  | 0.76 (0.46-1.26)                   | 9 (13.38)                                  | 1.00 (0.52-1.93)                   |
| <b>Skin autoimmune diseases</b>             | 112 (5.34)   | 1.34 (1.11-1.61)                   | 347 (12.4)                                 | 1.16 (1.05-1.29)                   | 119 (16.81)                                | 1.14 (0.95-1.37)                   |
| Pemphigus                                   | <6 (6.57)  | 1.26 (0.31-5.03)                   | <6 (12.63)                                 | 1.07 (0.40-2.86)                   | <6 (25.31)                                 | 1.42 (0.20-10.11)                  |
| Pemphigoid                                  | <6 (6.11)  | 1.11 (0.16-7.86)                   | <6 (5.32)                                  | 0.47 (0.07-3.34)                   | <6 (68.25)                                 | 3.14 (0.79-12.57)                  |
| Psoriasis vulgaris                          | 92 (5.66)  | 1.43 (1.17-1.76)                   | 299 (13.31)                                | 1.23 (1.10-1.38)                   | 100 (16.85)                                | 1.12 (0.92-1.37)                   |
| Alopecia areata                             | 9 (3.2)  | 0.80 (0.41-1.53)                   | 33 (9.67)                                  | 0.97 (0.69-1.37)                   | 14 (15.48)                                 | 1.20 (0.71-2.03)                   |
| Vitiligo                                    | 9 (5.64)   | 1.40 (0.73-2.69)                   | 13 (7.43)                                  | 0.76 (0.44-1.30)                   | <6 (10.61)                                 | 0.77 (0.19-3.10)                   |
| unexposed                                   | 30698 (3)  | 1.00 (ref)                         | 159229 (8.39)                              | 1.00 (ref)                         | 113165 (12.4)                              | 1.00 (ref)                         |

HR=Hazard Ratio, CI=Confidential Interval

<sup>a</sup>HRs were adjusted for parental psychiatric history, maternal characteristics (parity, age at birth, highest education level, cohabitation with a partner, residence, birth country) and birth characteristics (participant's sex,

calendar year of birth)



**eTable 5. Hazard ratios of any mental disorder among the offspring stratified by the numbers of comorbid maternal autoimmune diseases.**

| Exposures and Outcomes         | No of events | rate per 1000 person years | HR (95% CI), crude | HR (95% CI), adjusted <sup>a</sup> |
|--------------------------------|--------------|----------------------------|--------------------|------------------------------------|
| <b>Any mental disorder</b>     |              |                            |                    |                                    |
| Exposed to one AD              | 5077         | 9.37                       | 1.39 (1.35-1.43)   | 1.16 (1.13-1.20)                   |
| Exposed to more than one AD    | 383          | 9.50                       | 1.66 (1.51-1.84)   | 1.16 (1.05-1.28)                   |
| Unexposed                      | 303092       | 7.91                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Organic disorders</b>       |              |                            |                    |                                    |
| Exposed to one AD              | 66           | 0.11                       | 1.52 (1.20-1.95)   | 1.50 (1.18-1.92)                   |
| Exposed to more than one AD    | <6           | 0.12                       | 2.21 (0.92-5.31)   | 2.17 (0.90-5.22)                   |
| Unexposed                      | 4117         | 0.10                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Substance use disorders</b> |              |                            |                    |                                    |
| Exposed to one AD              | 814          | 3.25                       | 1.10 (1.02-1.17)   | 1.05 (0.98-1.12)                   |
| Exposed to more than one AD    | 40           | 2.99                       | 1.15 (0.84-1.56)   | 1.04 (0.76-1.41)                   |
| Unexposed                      | 73465        | 3.21                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Schizophrenia</b>           |              |                            |                    |                                    |
| Exposed to one AD              | 302          | 1.19                       | 1.53 (1.36-1.71)   | 1.35 (1.21-1.51)                   |
| Exposed to more than one AD    | 17           | 1.25                       | 1.90 (1.18-3.06)   | 1.42 (0.88-2.28)                   |
| Unexposed                      | 20171        | 0.86                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Mood disorders</b>          |              |                            |                    |                                    |
| Exposed to one AD              | 632          | 2.50                       | 1.29 (1.19-1.40)   | 1.14 (1.05-1.23)                   |
| Exposed to more than one AD    | 25           | 1.85                       | 1.17 (0.79-1.73)   | 0.87 (0.59-1.29)                   |
| Unexposed                      | 51512        | 2.22                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Neurotic disorders</b>      |              |                            |                    |                                    |
| Exposed to one AD              | 1611         | 4.00                       | 1.44 (1.37-1.51)   | 1.21 (1.15-1.27)                   |
| Exposed to more than one AD    | 112          | 4.28                       | 1.97 (1.64-2.37)   | 1.34 (1.11-1.61)                   |
| unexposed                      | 107385       | 3.37                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>OCD</b>                     |              |                            |                    |                                    |
| Exposed to one AD              | 199          | 0.48                       | 1.81 (1.58-2.09)   | 1.42 (1.23-1.64)                   |
| Exposed to more than one AD    | 14           | 0.53                       | 2.26 (1.34-3.81)   | 1.40 (0.83-2.37)                   |
| unexposed                      | 9623         | 0.30                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Eating disorders</b>        |              |                            |                    |                                    |
| Exposed to one AD              | 244          | 0.42                       | 1.32 (1.16-1.50)   | 1.14 (1.00-1.29)                   |
| Exposed to more than one AD    | 13           | 0.31                       | 1.24 (0.72-2.14)   | 0.92 (0.53-1.59)                   |
| unexposed                      | 16255        | 0.40                       | 1.00 (ref)         | 1.00 (ref)                         |

HR=Hazard Ratio, CI=Confidential Interval, AD=autoimmune disease, OCD=Obsessive-Compulsive Disorder, ADHD=Attention Deficit/Hyperactivity Disorder, ODD/CD=oppositional defiant disorder/conduct disorder

<sup>a</sup>HRs were adjusted for parental psychiatric history, maternal characteristics (parity, age at birth, highest education level, cohabitation with a partner, residence, birth country) and birth characteristics (participant's sex, calendar year of birth).

**eTable 5. (Continued) Hazard ratios of any mental disorder among the offspring stratified by the numbers of comorbid maternal autoimmune diseases.**

| Exposures and outcomes         | No of events | rate per 1000 person years | HR (95% CI), crude | HR (95% CI), adjusted <sup>a</sup> |
|--------------------------------|--------------|----------------------------|--------------------|------------------------------------|
| <b>Personality disorders</b>   |              |                            |                    |                                    |
| Exposed to one AD              | 355          | 1.40                       | 1.22 (1.10-1.35)   | 1.10 (0.99-1.22)                   |
| Exposed to more than one AD    | 19           | 1.41                       | 1.52 (0.97-2.38)   | 1.16 (0.74-1.81)                   |
| unexposed                      | 30538        | 1.31                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Intellectual disability</b> |              |                            |                    |                                    |
| Exposed to one AD              | 281          | 0.49                       | 1.25 (1.11-1.41)   | 1.18 (1.05-1.33)                   |
| Exposed to more than one AD    | 26           | 0.61                       | 1.44 (0.98-2.11)   | 1.32 (0.90-1.94)                   |
| unexposed                      | 14284        | 0.35                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Developmental disorders</b> |              |                            |                    |                                    |
| Exposed to one AD              | 679          | 1.18                       | 1.67 (1.55-1.80)   | 1.13 (1.05-1.22)                   |
| Exposed to more than one AD    | 76           | 1.80                       | 2.48 (1.98-3.10)   | 1.30 (1.04-1.63)                   |
| unexposed                      | 27272        | 0.67                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Childhood autism</b>        |              |                            |                    |                                    |
| Exposed to one AD              | 270          | 0.47                       | 1.90 (1.68-2.14)   | 1.21 (1.07-1.37)                   |
| Exposed to more than one AD    | 29           | 0.69                       | 2.47 (1.72-3.56)   | 1.24 (0.86-1.79)                   |
| unexposed                      | 8689         | 0.21                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Behavioral disorders</b>    |              |                            |                    |                                    |
| Exposed to one AD              | 1834         | 3.25                       | 1.56 (1.49-1.63)   | 1.20 (1.14-1.25)                   |
| Exposed to more than one AD    | 164          | 3.95                       | 1.89 (1.62-2.20)   | 1.18 (1.01-1.37)                   |
| unexposed                      | 80984        | 2.01                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>ADHD</b>                    |              |                            |                    |                                    |
| Exposed to one AD              | 1001         | 2.06                       | 1.69 (1.59-1.80)   | 1.18 (1.11-1.26)                   |
| Exposed to more than one AD    | 98           | 2.94                       | 2.43 (1.99-2.96)   | 1.28 (1.05-1.55)                   |
| unexposed                      | 43929        | 1.21                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>ODD/CD</b>                  |              |                            |                    |                                    |
| Exposed to one AD              | 201          | 0.41                       | 1.29 (1.12-1.48)   | 1.12 (0.97-1.29)                   |
| Exposed to more than one AD    | 18           | 0.53                       | 1.59 (1.00-2.52)   | 1.20 (0.76-1.91)                   |
| unexposed                      | 10766        | 0.29                       | 1.00 (ref)         | 1.00 (ref)                         |

HR=Hazard Ratio, CI=Confidential Interval, AD=autoimmune disease, OCD=Obsessive-Compulsive Disorder, ADHD=Attention Deficit/Hyperactivity Disorder, ODD/CD=oppositional defiant disorder/conduct disorder

<sup>a</sup>HRs were adjusted for parental psychiatric history, maternal characteristics (parity, age at birth, highest education level, cohabitation with a partner, residence, birth country) and birth characteristics (participant's sex, calendar year of birth).

**eTable 6. Associations between specific maternal autoimmune diseases diagnosed before childbirth and overall mental disorders among term-born individuals (n=2 073 334).**

| Exposures                                 | No of events | rate per 1000 person years | HR (95% CI), crude | HR (95% CI), adjusted <sup>a</sup> |
|---|--------------|----------------------------|--------------------|------------------------------------|
| Any autoimmune diseases                   | 4571         | 9.04                       | 1.38 (1.34-1.42)   | 1.15 (1.12-1.18)                   |
| Endocrine autoimmune diseases             | 1608         | 8.99                       | 1.32 (1.25-1.38)   | 1.16 (1.10-1.22)                   |
| Type 1 Diabetes                           | 1039         | 9.86                       | 1.25 (1.18-1.33)   | 1.21 (1.14-1.29)                   |
| Thyreotoxicosis                           | 474          | 7.75                       | 1.45 (1.32-1.58)   | 1.06 (0.96-1.15)                   |
| Autoimmune thyroiditis                    | 85           | 7.34                       | 1.65 (1.33-2.03)   | 1.16 (0.94-1.43)                   |
| Primary adrenocortical insufficiency      | 33           | 11.07                      | 1.61 (1.15-2.26)   | 1.36 (0.97-1.91)                   |
| Connective tissue autoimmune diseases     | 704          | 9.83                       | 1.58 (1.47-1.70)   | 1.23 (1.14-1.33)                   |
| Rheumatoid arthritis                      | 368          | 9.74                       | 1.58 (1.42-1.75)   | 1.28 (1.15-1.41)                   |
| Juvenile arthritis                        | 185          | 10.38                      | 1.73 (1.50-2.00)   | 1.14 (0.99-1.32)                   |
| Dermatopolymyositis                       | 12           | 6.40                       | 0.94 (0.53-1.66)   | 0.74 (0.42-1.31)                   |
| Polymyalgia rheumatica/temporal arteritis | 8            | 21.97                      | 4.92 (2.41-10.04)  | 3.35 (1.68-6.70)                   |
| Scleroderma                               | 26           | 10.78                      | 1.76 (1.20-2.58)   | 1.31 (0.89-1.93)                   |
| Systemic lupus erythematosus              | 102          | 10.72                      | 1.64 (1.35-1.98)   | 1.36 (1.12-1.65)                   |
| Sjögren syndrome                          | 22           | 8.91                       | 1.65 (1.09-2.51)   | 1.20 (0.79-1.82)                   |
| Ankylosing Spondylitis                    | 57           | 8.10                       | 1.32 (1.02-1.71)   | 1.08 (0.83-1.40)                   |
| Wegener granulomatosis                    | 0            | -                          | -                  | -                                  |
| Gastrointestinal autoimmune diseases      | 1347         | 8.50                       | 1.34 (1.27-1.42)   | 1.10 (1.05-1.16)                   |
| Celiac disease                            | 95           | 9.13                       | 1.68 (1.38-2.06)   | 1.17 (0.96-1.43)                   |
| Crohn disease                             | 501          | 8.60                       | 1.38 (1.26-1.50)   | 1.06 (0.97-1.16)                   |
| Ulcerative colitis                        | 799          | 7.97                       | 1.25 (1.17-1.34)   | 1.07 (1.00-1.14)                   |
| Primary biliary cirrhosis                 | 9            | 21.35                      | 4.02 (2.10-7.68)   | 2.92 (1.52-5.61)                   |
| Autoimmune hepatitis                      | 64           | 13.09                      | 2.07 (1.62-2.64)   | 1.56 (1.22-1.99)                   |
| Blood autoimmune diseases                 | 122          | 8.97                       | 1.46 (1.22-1.74)   | 1.11 (0.93-1.33)                   |
| Pernicious anemia                         | 37           | 10.49                      | 1.86 (1.35-2.55)   | 1.27 (0.92-1.76)                   |
| Autoimmune hemolytic anemia               | 9            | 7.46                       | 1.19 (0.62-2.29)   | 0.91 (0.47-1.75)                   |
| Idiopathic thrombocytopenic purpura       | 78           | 8.63                       | 1.37 (1.09-1.71)   | 1.08 (0.87-1.35)                   |
| Nervous system autoimmune diseases        | 396          | 9.33                       | 1.38 (1.25-1.52)   | 1.17 (1.06-1.30)                   |
| Multiple sclerosis                        | 271          | 9.37                       | 1.44 (1.28-1.63)   | 1.22 (1.09-1.38)                   |
| Guillain-Barré syndrome                   | 101          | 9.90                       | 1.35 (1.11-1.64)   | 1.12 (0.92-1.36)                   |
| Myasthenia gravis                         | 27           | 7.25                       | 1.00 (0.68-1.46)   | 0.92 (0.63-1.34)                   |
| Skin autoimmune diseases                  | 505          | 9.88                       | 1.50 (1.38-1.64)   | 1.17 (1.07-1.27)                   |
| Pemphigus                                 | <6           | 7.17                       | 1.30 (0.50-3.42)   | 0.80 (0.30-2.14)                   |
| Pemphigoid                                | <6           | 10.70                      | 1.81 (0.68-4.77)   | 1.19 (0.45-3.16)                   |
| Psoriasis vulgaris                        | 432          | 10.61                      | 1.59 (1.45-1.75)   | 1.23 (1.12-1.35)                   |
| Alopecia areata                           | 48           | 7.32                       | 1.16 (0.87-1.53)   | 0.93 (0.70-1.24)                   |
| Vitiligo                                  | 20           | 6.26                       | 1.12 (0.73-1.74)   | 0.86 (0.56-1.33)                   |

HR=Hazard Ratio, CI=Confidential Interval

<sup>a</sup>HRs were adjusted for parental psychiatric history, maternal characteristics (parity, age at birth, highest education level, cohabitation with a partner, residence, birth country) and birth characteristics (participant's sex, calendar year of birth).

**eTable 7. Hazard ratios of specific mental disorders according to prenatal exposure to any maternal autoimmune disease among term-born individuals (n=2 073 334).**

| Exposures and outcomes         | No of events | rate per 1000 person years | HR (95% CI), crude | HR (95% CI), adjusted <sup>a</sup> |
|--------------------------------|--------------|----------------------------|--------------------|------------------------------------|
| <b>Any mental disorder</b>     |              |                            |                    |                                    |
| exposed                        | 4571         | 9.04                       | 1.38 (1.34-1.42)   | 1.15 (1.12-1.18)                   |
| unexposed                      | 273780       | 7.88                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Organic disorders</b>       |              |                            |                    |                                    |
| exposed                        | 56           | 0.10                       | 1.51 (1.16-1.96)   | 1.50 (1.15-1.95)                   |
| unexposed                      | 3532         | 0.10                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Substance use disorders</b> |              |                            |                    |                                    |
| exposed                        | 720          | 3.21                       | 1.09 (1.01-1.17)   | 1.05 (0.97-1.12)                   |
| unexposed                      | 66169        | 3.23                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Schizophrenia</b>           |              |                            |                    |                                    |
| exposed                        | 265          | 1.16                       | 1.51 (1.34-1.71)   | 1.34 (1.19-1.52)                   |
| unexposed                      | 18081        | 0.86                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Mood disorders</b>          |              |                            |                    |                                    |
| exposed                        | 547          | 2.41                       | 1.25 (1.15-1.36)   | 1.11 (1.02-1.21)                   |
| unexposed                      | 46266        | 2.23                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Neurotic disorders</b>      |              |                            |                    |                                    |
| exposed                        | 1423         | 3.85                       | 1.41 (1.34-1.49)   | 1.19 (1.13-1.25)                   |
| unexposed                      | 96928        | 3.37                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>OCD</b>                     |              |                            |                    |                                    |
| exposed                        | 182          | 0.48                       | 1.80 (1.55-2.09)   | 1.41 (1.22-1.64)                   |
| unexposed                      | 8842         | 0.30                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Eating disorders</b>        |              |                            |                    |                                    |
| exposed                        | 206          | 0.38                       | 1.23 (1.07-1.41)   | 1.07 (0.93-1.22)                   |
| unexposed                      | 14825        | 0.40                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Personality disorders</b>   |              |                            |                    |                                    |
| exposed                        | 317          | 1.39                       | 1.23 (1.10-1.37)   | 1.12 (1.00-1.25)                   |
| unexposed                      | 27380        | 1.31                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Intellectual disability</b> |              |                            |                    |                                    |
| exposed                        | 234          | 0.44                       | 1.20 (1.05-1.36)   | 1.13 (1.00-1.29)                   |
| unexposed                      | 12177        | 0.33                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Developmental disorders</b> |              |                            |                    |                                    |
| exposed                        | 657          | 1.23                       | 1.74 (1.61-1.87)   | 1.16 (1.08-1.26)                   |
| unexposed                      | 24936        | 0.68                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Childhood autism</b>        |              |                            |                    |                                    |
| exposed                        | 254          | 0.47                       | 1.92 (1.69-2.17)   | 1.21 (1.07-1.37)                   |
| unexposed                      | 7852         | 0.21                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Behavioral disorders</b>    |              |                            |                    |                                    |
| exposed                        | 1651         | 3.14                       | 1.51 (1.44-1.59)   | 1.16 (1.11-1.22)                   |
| unexposed                      | 73735        | 2.02                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>ADHD</b>                    |              |                            |                    |                                    |
| exposed                        | 905          | 2.02                       | 1.66 (1.55-1.77)   | 1.16 (1.08-1.23)                   |
| unexposed                      | 40012        | 1.22                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>ODD/CD</b>                  |              |                            |                    |                                    |
| exposed                        | 175          | 0.39                       | 1.21 (1.05-1.41)   | 1.07 (0.92-1.24)                   |
| unexposed                      | 9793         | 0.30                       | 1.00 (ref)         | 1.00 (ref)                         |

HR=Hazard Ratio, CI=Confidential Interval, OCD=Obsessive-Compulsive Disorder, ADHD=Attention Deficit/Hyperactivity Disorder, ODD/CD=oppositional defiant disorder/conduct disorder.

<sup>a</sup>HRs were adjusted for parental psychiatric history, maternal characteristics (parity, age at birth, highest education level, cohabitation with a partner, residence, birth country) and birth characteristics (participant's sex, calendar year of birth).

**eTable 8. Associations between specific maternal autoimmune diseases diagnosed before child birth and overall mental disorders among individuals without congenital malformations of the nervous system or chromosomal abnormalities.**

| Exposures                                 | No of events | rate per 1000 person years | HR (95% CI), crude | HR (95% CI), adjusted <sup>a</sup> |
|---|--------------|----------------------------|--------------------|------------------------------------|
| Any autoimmune diseases                   | 5362         | 9.27                       | 1.41 (1.38-1.45)   | 1.17 (1.13-1.20)                   |
| Endocrine autoimmune diseases             | 2103         | 9.40                       | 1.37 (1.32-1.43)   | 1.19 (1.14-1.24)                   |
| Type 1 Diabetes                           | 1475         | 10.23                      | 1.33 (1.26-1.40)   | 1.24 (1.18-1.31)                   |
| Thyreotoxicosis                           | 532          | 8.00                       | 1.51 (1.38-1.64)   | 1.08 (0.99-1.17)                   |
| Autoimmune thyroiditis                    | 91           | 7.28                       | 1.63 (1.33-2.01)   | 1.13 (0.92-1.39)                   |
| Primary adrenocortical insufficiency      | 35           | 10.44                      | 1.54 (1.10-2.14)   | 1.29 (0.92-1.79)                   |
| Connective tissue autoimmune diseases     | 784          | 9.97                       | 1.61 (1.50-1.72)   | 1.25 (1.16-1.34)                   |
| Rheumatoid arthritis                      | 396          | 9.65                       | 1.58 (1.43-1.74)   | 1.26 (1.15-1.39)                   |
| Juvenile arthritis                        | 198          | 10.39                      | 1.73 (1.51-1.99)   | 1.14 (1.00-1.32)                   |
| Dermatopolymyositis                       | 15           | 7.30                       | 1.09 (0.66-1.81)   | 0.83 (0.50-1.38)                   |
| Polymyalgia rheumatica/temporal arteritis | 7            | 17.82                      | 4.46 (2.16-9.23)   | 2.56 (1.22-5.36)                   |
| Scleroderma                               | 29           | 10.72                      | 1.76 (1.23-2.53)   | 1.31 (0.91-1.89)                   |
| Systemic lupus erythematosus              | 124          | 10.81                      | 1.67 (1.40-1.99)   | 1.36 (1.14-1.62)                   |
| Sjögren syndrome                          | 27           | 9.95                       | 1.88 (1.30-2.73)   | 1.31 (0.90-1.91)                   |
| Ankylosing Spondylitis                    | 67           | 8.87                       | 1.46 (1.15-1.85)   | 1.17 (0.92-1.49)                   |
| Wegener granulomatosis                    | <6           | 7.50                       | 1.32 (0.50-3.46)   | 0.96 (0.36-2.57)                   |
| Gastrointestinal autoimmune diseases      | 1487         | 8.61                       | 1.38 (1.31-1.45)   | 1.11 (1.05-1.17)                   |
| Celiac disease                            | 102          | 9.07                       | 1.70 (1.40-2.06)   | 1.15 (0.94-1.39)                   |
| Crohn disease                             | 567          | 8.87                       | 1.44 (1.32-1.56)   | 1.09 (1.00-1.18)                   |
| Ulcerative colitis                        | 873          | 8.01                       | 1.27 (1.19-1.36)   | 1.07 (1.00-1.14)                   |
| Primary biliary cirrhosis                 | 12           | 22.15                      | 4.41 (2.53-7.68)   | 3.13 (1.78-5.52)                   |
| Autoimmune hepatitis                      | 75           | 12.96                      | 2.03 (1.62-2.55)   | 1.51 (1.20-1.89)                   |
| Blood autoimmune diseases                 | 136          | 9.06                       | 1.48 (1.25-1.75)   | 1.11 (0.94-1.32)                   |
| Pernicious anemia                         | 42           | 11.03                      | 1.91 (1.41-2.59)   | 1.31 (0.97-1.77)                   |
| Autoimmune hemolytic anemia               | 10           | 7.89                       | 1.32 (0.72-2.44)   | 0.95 (0.51-1.76)                   |
| Idiopathic thrombocytopenic purpura       | 86           | 8.50                       | 1.35 (1.10-1.67)   | 1.06 (0.86-1.31)                   |
| Nervous system autoimmune diseases        | 426          | 9.39                       | 1.41 (1.28-1.55)   | 1.17 (1.07-1.29)                   |
| Multiple sclerosis                        | 288          | 9.34                       | 1.46 (1.30-1.64)   | 1.22 (1.08-1.37)                   |
| Guillain-Barré syndrome                   | 114          | 10.39                      | 1.43 (1.19-1.72)   | 1.16 (0.97-1.40)                   |
| Myasthenia gravis                         | 29           | 7.20                       | 1.00 (0.69-1.44)   | 0.88 (0.61-1.27)                   |
| Skin autoimmune diseases                  | 572          | 10.26                      | 1.58 (1.46-1.71)   | 1.20 (1.11-1.30)                   |
| Pemphigus                                 | 6            | 9.41                       | 1.70 (0.77-3.76)   | 1.04 (0.47-2.32)                   |
| Pemphigoid                                | <6           | 11.04                      | 1.96 (0.74-5.13)   | 1.15 (0.43-3.08)                   |
| Psoriasis vulgaris                        | 486          | 10.93                      | 1.64 (1.50-1.80)   | 1.25 (1.14-1.37)                   |
| Alopecia areata                           | 56           | 7.90                       | 1.28 (0.99-1.66)   | 1.02 (0.78-1.32)                   |
| Vitiligo                                  | 24           | 6.84                       | 1.27 (0.85-1.88)   | 0.94 (0.63-1.40)                   |

HR=Hazard Ratio, CI=Confidential Interval

<sup>a</sup>HRs were adjusted for parental psychiatric history, maternal characteristics (parity, age at birth, highest education level, cohabitation with a partner, residence, birth country) and birth characteristics (participant's sex, calendar year of birth).

**eTable 9. Hazard ratios of specific mental disorder according to prenatal exposure to any maternal autoimmune disease among individuals without congenital malformations of the nervous system and chromosomal abnormalities.**

| Exposures and outcomes         | No of events | rate per 1000 person years | HR (95% CI), crude | HR (95% CI), adjusted <sup>a</sup> |
|--------------------------------|--------------|----------------------------|--------------------|------------------------------------|
| <b>Any mental disorder</b>     |              |                            |                    |                                    |
| exposed                        | 5362         | 9.27                       | 1.41 (1.38-1.45)   | 1.17 (1.13-1.20)                   |
| unexposed                      | 298527       | 7.83                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Organic disorders</b>       |              |                            |                    |                                    |
| exposed                        | 70           | 0.11                       | 1.59 (1.26-2.02)   | 1.57 (1.24-1.99)                   |
| unexposed                      | 3979         | 0.10                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Substance use disorders</b> |              |                            |                    |                                    |
| exposed                        | 848          | 3.24                       | 1.10 (1.03-1.17)   | 1.05 (0.98-1.12)                   |
| unexposed                      | 73101        | 3.22                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Schizophrenia</b>           |              |                            |                    |                                    |
| exposed                        | 318          | 1.19                       | 1.55 (1.39-1.73)   | 1.36 (1.22-1.52)                   |
| unexposed                      | 20008        | 0.86                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Mood disorders</b>          |              |                            |                    |                                    |
| exposed                        | 655          | 2.48                       | 1.29 (1.20-1.40)   | 1.13 (1.04-1.22)                   |
| unexposed                      | 51185        | 2.22                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Neurotic disorders</b>      |              |                            |                    |                                    |
| exposed                        | 1704         | 4.00                       | 1.46 (1.40-1.54)   | 1.21 (1.15-1.27)                   |
| unexposed                      | 106562       | 3.36                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>OCD</b>                     |              |                            |                    |                                    |
| exposed                        | 209          | 0.48                       | 1.82 (1.58-2.08)   | 1.41 (1.22-1.61)                   |
| unexposed                      | 9557         | 0.30                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Eating disorders</b>        |              |                            |                    |                                    |
| exposed                        | 250          | 0.41                       | 1.30 (1.15-1.47)   | 1.11 (0.98-1.26)                   |
| unexposed                      | 16085        | 0.40                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Personality disorders</b>   |              |                            |                    |                                    |
| exposed                        | 372          | 1.40                       | 1.23 (1.11-1.37)   | 1.10 (1.00-1.22)                   |
| unexposed                      | 30350        | 1.31                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Intellectual disability</b> |              |                            |                    |                                    |
| exposed                        | 272          | 0.44                       | 1.38 (1.22-1.55)   | 1.28 (1.13-1.44)                   |
| unexposed                      | 11906        | 0.29                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Developmental disorders</b> |              |                            |                    |                                    |
| exposed                        | 738          | 1.21                       | 1.74 (1.62-1.87)   | 1.15 (1.07-1.24)                   |
| unexposed                      | 26563        | 0.66                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Childhood autism</b>        |              |                            |                    |                                    |
| exposed                        | 287          | 0.47                       | 1.94 (1.73-2.18)   | 1.21 (1.08-1.37)                   |
| unexposed                      | 8344         | 0.21                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Behavioral disorders</b>    |              |                            |                    |                                    |
| exposed                        | 1972         | 3.27                       | 1.58 (1.51-1.65)   | 1.19 (1.14-1.25)                   |
| unexposed                      | 80048        | 2.00                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>ADHD</b>                    |              |                            |                    |                                    |
| exposed                        | 1083         | 2.10                       | 1.73 (1.63-1.84)   | 1.19 (1.12-1.26)                   |
| unexposed                      | 43466        | 1.20                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>ODD/CD</b>                  |              |                            |                    |                                    |
| exposed                        | 216          | 0.42                       | 1.31 (1.14-1.50)   | 1.12 (0.98-1.29)                   |
| unexposed                      | 10638        | 0.29                       | 1.00 (ref)         | 1.00 (ref)                         |

HR=Hazard Ratio, CI=Confidential Interval, OCD=Obsessive-Compulsive Disorder, ADHD=Attention Deficit/Hyperactivity Disorder, ODD/CD=oppositional defiant disorder/conduct disorder.

<sup>a</sup>HRs were adjusted for parental psychiatric history, maternal characteristics (parity, age at birth, highest education level, cohabitation with a partner, residence, birth country) and birth characteristics (participant's sex, calendar year of birth).

**eTable 10. Associations between specific autoimmune diseases of mothers and overall mental disorders in the offspring born during 1998-2007.**

| Exposures                                 | No of events | rate per 1000 person years | HR (95% CI), crude | HR (95% CI), adjusted <sup>a</sup> |
|---|--------------|----------------------------|--------------------|------------------------------------|
| Any autoimmune diseases                   | 2045         | 9.88                       | 1.26 (1.21-1.32)   | 1.19 (1.14-1.25)                   |
| Endocrine autoimmune diseases             | 705          | 9.90                       | 1.27 (1.18-1.37)   | 1.21 (1.12-1.30)                   |
| Type 1 Diabetes                           | 327          | 11.48                      | 1.43 (1.29-1.60)   | 1.28 (1.15-1.43)                   |
| Thyreotoxicosis                           | 333          | 8.97                       | 1.17 (1.05-1.31)   | 1.16 (1.04-1.29)                   |
| Autoimmune thyroiditis                    | 51           | 8.45                       | 1.13 (0.86-1.48)   | 1.20 (0.91-1.58)                   |
| Primary adrenocortical insufficiency      | 8            | 9.71                       | 1.30 (0.65-2.59)   | 1.12 (0.56-2.24)                   |
| Connective tissue autoimmune diseases     | 327          | 10.68                      | 1.38 (1.23-1.53)   | 1.28 (1.15-1.42)                   |
| Rheumatoid arthritis                      | 169          | 10.31                      | 1.34 (1.15-1.55)   | 1.29 (1.11-1.50)                   |
| Juvenile arthritis                        | 85           | 10.50                      | 1.34 (1.08-1.66)   | 1.11 (0.90-1.37)                   |
| Dermatopolymyositis                       | <6           | 4.10                       | 0.52 (0.17-1.60)   | 0.45 (0.15-1.41)                   |
| Polymyalgia rheumatica/temporal arteritis | <6           | 13.29                      | 1.88 (0.61-5.75)   | 1.85 (0.60-5.74)                   |
| Scleroderma                               | 16           | 14.61                      | 1.89 (1.16-3.09)   | 1.69 (1.03-2.76)                   |
| Systemic lupus erythematosus              | 47           | 11.74                      | 1.52 (1.15-2.03)   | 1.45 (1.09-1.93)                   |
| Sjögren syndrome                          | 15           | 11.68                      | 1.51 (0.91-2.49)   | 1.39 (0.84-2.30)                   |
| Ankylosing Spondylitis                    | 24           | 9.20                       | 1.19 (0.80-1.78)   | 1.16 (0.78-1.73)                   |
| Wegener granulomatosis                    | <6           | 9.04                       | 1.16 (0.29-4.60)   | 1.17 (0.29-4.66)                   |
| Gastrointestinal autoimmune diseases      | 640          | 9.32                       | 1.19 (1.10-1.29)   | 1.14 (1.06-1.24)                   |
| Celiac disease                            | 53           | 10.62                      | 1.40 (1.07-1.83)   | 1.30 (1.00-1.71)                   |
| Crohn disease                             | 239          | 9.13                       | 1.16 (1.02-1.32)   | 1.05 (0.92-1.19)                   |
| Ulcerative colitis                        | 377          | 8.80                       | 1.13 (1.02-1.25)   | 1.12 (1.01-1.24)                   |
| Primary biliary cirrhosis                 | <6           | 19.45                      | 2.52 (1.05-6.04)   | 2.52 (1.05-6.04)                   |
| Autoimmune hepatitis                      | 31           | 13.98                      | 1.81 (1.27-2.57)   | 1.82 (1.28-2.59)                   |
| Blood autoimmune diseases                 | 64           | 10.04                      | 1.29 (1.01-1.65)   | 1.22 (0.96-1.56)                   |
| Pernicious anemia                         | 21           | 12.07                      | 1.58 (1.03-2.42)   | 1.45 (0.94-2.22)                   |
| Autoimmune hemolytic anemia               | <6           | 8.57                       | 1.10 (0.46-2.65)   | 0.98 (0.41-2.36)                   |
| Idiopathic thrombocytopenic purpura       | 39           | 9.43                       | 1.20 (0.88-1.65)   | 1.17 (0.85-1.60)                   |
| Nervous system autoimmune diseases        | 163          | 10.63                      | 1.37 (1.17-1.59)   | 1.27 (1.09-1.48)                   |
| Multiple sclerosis                        | 125          | 11.19                      | 1.46 (1.23-1.74)   | 1.38 (1.16-1.65)                   |
| Guillain-Barré syndrome                   | 30           | 10.21                      | 1.26 (0.88-1.80)   | 1.07 (0.75-1.53)                   |
| Myasthenia gravis                         | 10           | 7.27                       | 0.91 (0.49-1.69)   | 0.89 (0.48-1.66)                   |
| Skin autoimmune diseases                  | 224          | 10.76                      | 1.37 (1.20-1.56)   | 1.22 (1.07-1.39)                   |
| Pemphigus                                 | <6           | 10.42                      | 1.36 (0.44-4.23)   | 1.11 (0.36-3.43)                   |
| Pemphigoid                                | <6           | 11.41                      | 1.48 (0.37-5.90)   | 1.32 (0.33-5.26)                   |
| Psoriasis vulgaris                        | 188          | 11.89                      | 1.52 (1.31-1.75)   | 1.31 (1.14-1.51)                   |
| Alopecia areata                           | 23           | 8.11                       | 1.02 (0.68-1.54)   | 0.96 (0.64-1.44)                   |
| Vitiligo                                  | 12           | 6.46                       | 0.85 (0.48-1.48)   | 0.87 (0.50-1.54)                   |

HR=Hazard Ratio, CI=Confidential Interval

<sup>a</sup>HRs were adjusted for parental psychiatric history, maternal characteristics (parity, age at birth, highest education level,

cohabitation with a partner, residence, birth country) and birth characteristics (participant's sex, calendar year of birth).



**eTable 11. Associations between specific autoimmune diseases of mothers and overall mental disorders in the offspring born during 2008-2015.**

| Exposures                                 | No of events | rate per 1000 person years | HR (95% CI), crude | HR (95% CI), adjusted <sup>a</sup> |
|---|--------------|----------------------------|--------------------|------------------------------------|
| Any autoimmune diseases                   | 517          | 6.58                       | 1.32 (1.21-1.44)   | 1.30 (1.19-1.42)                   |
| Endocrine autoimmune diseases             | 171          | 6.56                       | 1.31 (1.13-1.52)   | 1.31 (1.13-1.53)                   |
| Type 1 Diabetes                           | 67           | 8.12                       | 1.62 (1.27-2.05)   | 1.48 (1.17-1.89)                   |
| Thyreotoxicosis                           | 72           | 5.33                       | 1.04 (0.83-1.32)   | 1.10 (0.87-1.38)                   |
| Autoimmune thyroiditis                    | 31           | 6.34                       | 1.34 (0.94-1.90)   | 1.41 (0.99-2.00)                   |
| Primary adrenocortical insufficiency      | 9            | 18.69                      | 3.76 (1.96-7.23)   | 3.85 (2.00-7.40)                   |
| Connective tissue autoimmune diseases     | 105          | 7.82                       | 1.58 (1.30-1.91)   | 1.53 (1.26-1.85)                   |
| Rheumatoid arthritis                      | 58           | 8.02                       | 1.60 (1.24-2.08)   | 1.59 (1.23-2.06)                   |
| Juvenile arthritis                        | 40           | 11.64                      | 2.37 (1.74-3.24)   | 2.08 (1.53-2.84)                   |
| Dermatopolymyositis                       | 0            | -                          | -                  | -                                  |
| Polymyalgia rheumatica/temporal arteritis | <6           | 14.81                      | 3.08 (0.78-12.1)   | 2.86 (0.72-11.4)                   |
| Scleroderma                               | <6           | 4.29                       | 0.83 (0.21-3.29)   | 0.82 (0.20-3.26)                   |
| Systemic lupus erythematosus              | 7            | 4.59                       | 0.93 (0.44-1.94)   | 0.91 (0.43-1.91)                   |
| Sjögren syndrome                          | <6           | 7.33                       | 1.54 (0.64-3.70)   | 1.49 (0.62-3.58)                   |
| Ankylosing Spondylitis                    | 11           | 6.60                       | 1.38 (0.77-2.50)   | 1.37 (0.76-2.48)                   |
| Wegener granulomatosis                    | <6           | 16.70                      | 3.37 (0.85-13.4)   | 3.47 (0.87-13.8)                   |
| Gastrointestinal autoimmune diseases      | 162          | 5.97                       | 1.20 (1.02-1.40)   | 1.17 (1.00-1.37)                   |
| Celiac disease                            | 19           | 6.70                       | 1.39 (0.89-2.18)   | 1.35 (0.86-2.12)                   |
| Crohn disease                             | 60           | 5.82                       | 1.16 (0.90-1.50)   | 1.11 (0.86-1.44)                   |
| Ulcerative colitis                        | 89           | 5.27                       | 1.05 (0.85-1.29)   | 1.06 (0.86-1.30)                   |
| Primary biliary cirrhosis                 | <6           | 15.68                      | 3.11 (0.79-12.2)   | 3.13 (0.78-12.5)                   |
| Autoimmune hepatitis                      | 9            | 11.71                      | 2.35 (1.22-4.51)   | 1.97 (1.02-3.79)                   |
| Blood autoimmune diseases                 | 8            | 3.35                       | 0.67 (0.34-1.34)   | 0.68 (0.34-1.36)                   |
| Pernicious anemia                         | <6           | 6.46                       | 1.28 (0.53-3.06)   | 1.27 (0.53-3.04)                   |
| Autoimmune hemolytic anemia               | <6           | 5.70                       | 1.14 (0.16-8.02)   | 1.34 (0.19-9.50)                   |
| Idiopathic thrombocytopenic purpura       | <6           | 1.37                       | 0.28 (0.07-1.11)   | 0.28 (0.07-1.11)                   |
| Nervous system autoimmune diseases        | 43           | 7.59                       | 1.53 (1.13-2.06)   | 1.54 (1.14-2.08)                   |
| Multiple sclerosis                        | 30           | 6.48                       | 1.30 (0.91-1.86)   | 1.33 (0.93-1.90)                   |
| Guillain-Barré syndrome                   | 9            | 12.44                      | 2.46 (1.28-4.71)   | 2.36 (1.23-4.54)                   |
| Myasthenia gravis                         | <6           | 11.97                      | 2.46 (0.93-6.52)   | 2.42 (0.91-6.45)                   |
| Skin autoimmune diseases                  | 54           | 7.58                       | 1.52 (1.16-1.98)   | 1.41 (1.08-1.85)                   |
| Pemphigus                                 | <6           | 7.43                       | 1.55 (0.22-10.92)  | 1.03 (0.15-7.34)                   |
| Pemphigoid                                | 0            | -                          | -                  | -                                  |
| Psoriasis vulgaris                        | 46           | 8.88                       | 1.77 (1.33-2.37)   | 1.64 (1.23-2.20)                   |
| Alopecia areata                           | <6           | 2.63                       | 0.54 (0.17-1.65)   | 0.52 (0.17-1.61)                   |
| Vitiligo                                  | <6           | 5.95                       | 1.20 (0.45-3.17)   | 1.15 (0.43-3.06)                   |

HR=Hazard Ratio, CI=Confidential Interval

<sup>a</sup>HRs were adjusted for parental psychiatric history, maternal characteristics (parity, age at birth, highest education level,

cohabitation with a partner, residence, birth country) and birth characteristics (participant's sex, calendar year of birth).

**eTable 12. Associations between specific paternal autoimmune diseases diagnosed before childbirth and overall mental disorders in offspring.**

| Exposures                                 | No of events | rate per 1000 person years | HR (95% CI), crude | HR (95% CI), adjusted <sup>a</sup> |
|---|--------------|----------------------------|--------------------|------------------------------------|
| Any autoimmune diseases                   | 3903         | 8.84                       | 1.30 (1.26-1.34)   | 1.09 (1.05-1.12)                   |
| Endocrine autoimmune diseases             | 1590         | 9.36                       | 1.30 (1.24-1.37)   | 1.12 (1.06-1.17)                   |
| Type 1 Diabetes                           | 1475         | 9.45                       | 1.29 (1.23-1.36)   | 1.12 (1.06-1.18)                   |
| Thyreotoxicosis                           | 93           | 8.63                       | 1.55 (1.26-1.89)   | 1.16 (0.95-1.42)                   |
| Autoimmune thyroiditis                    | 9            | 6.23                       | 1.22 (0.64-2.32)   | 0.92 (0.48-1.78)                   |
| Primary adrenocortical insufficiency      | 21           | 8.17                       | 1.19 (0.78-1.81)   | 0.92 (0.60-1.41)                   |
| Connective tissue autoimmune diseases     | 497          | 8.51                       | 1.31 (1.20-1.43)   | 1.06 (0.97-1.16)                   |
| Rheumatoid arthritis                      | 205          | 8.79                       | 1.32 (1.15-1.52)   | 1.11 (0.96-1.27)                   |
| Juvenile arthritis                        | 78           | 8.37                       | 1.42 (1.14-1.78)   | 0.97 (0.77-1.21)                   |
| Dermatopolymyositis                       | 21           | 10.96                      | 1.68 (1.10-2.57)   | 1.28 (0.83-1.96)                   |
| Polymyalgia rheumatica/temporal arteritis | <6           | 4.42                       | 0.79 (0.26-2.39)   | 0.48 (0.15-1.49)                   |
| Scleroderma                               | 6            | 5.08                       | 0.77 (0.35-1.69)   | 0.59 (0.27-1.32)                   |
| Systemic lupus erythematosus              | 17           | 9.57                       | 1.47 (0.91-2.36)   | 1.31 (0.82-2.11)                   |
| Sjögren syndrome                          | 8            | 7.73                       | 1.27 (0.64-2.52)   | 1.00 (0.50-1.99)                   |
| Ankylosing Spondylitis                    | 195          | 8.64                       | 1.32 (1.14-1.52)   | 1.11 (0.96-1.28)                   |
| Wegener granulomatosis                    | <6           | 6.53                       | 1.00 (0.37-2.73)   | 1.05 (0.39-2.80)                   |
| Gastrointestinal autoimmune diseases      | 1093         | 8.02                       | 1.26 (1.18-1.33)   | 1.02 (0.96-1.09)                   |
| Celiac disease                            | 60           | 10.19                      | 1.89 (1.47-2.43)   | 1.17 (0.91-1.51)                   |
| Crohn disease                             | 366          | 8.04                       | 1.29 (1.16-1.42)   | 1.01 (0.91-1.12)                   |
| Ulcerative colitis                        | 686          | 7.77                       | 1.23 (1.14-1.33)   | 1.04 (0.96-1.12)                   |
| Primary biliary cirrhosis                 | <6           | 2.40                       | 0.37 (0.06-2.43)   | 0.36 (0.05-2.57)                   |
| Autoimmune hepatitis                      | 79           | 9.54                       | 1.29 (1.03-1.61)   | 0.98 (0.79-1.23)                   |
| Blood autoimmune diseases                 | 62           | 8.44                       | 1.34 (1.04-1.72)   | 1.10 (0.86-1.42)                   |
| Pernicious anemia                         | 17           | 10.86                      | 1.58 (0.98-2.54)   | 1.40 (0.87-2.25)                   |
| Autoimmune hemolytic anemia               | 8            | 9.45                       | 1.61 (0.81-3.21)   | 1.28 (0.64-2.55)                   |
| Idiopathic thrombocytopenic purpura       | 38           | 7.61                       | 1.26 (0.92-1.73)   | 1.00 (0.73-1.37)                   |
| Nervous system autoimmune diseases        | 315          | 9.07                       | 1.28 (1.14-1.43)   | 1.10 (0.99-1.23)                   |
| Multiple sclerosis                        | 171          | 8.23                       | 1.19 (1.02-1.38)   | 1.02 (0.88-1.19)                   |
| Guillain-Barré syndrome                   | 127          | 10.28                      | 1.42 (1.20-1.69)   | 1.19 (1.00-1.42)                   |
| Myasthenia gravis                         | 22           | 11.30                      | 1.62 (1.07-2.46)   | 1.47 (0.97-2.23)                   |
| Skin autoimmune diseases                  | 406          | 9.64                       | 1.49 (1.35-1.64)   | 1.16 (1.05-1.28)                   |
| Pemphigus                                 | <6           | 2.62                       | 0.60 (0.10-3.52)   | 0.32 (0.05-2.27)                   |
| Pemphigoid                                | 0            | -                          | -                  | -                                  |
| Psoriasis vulgaris                        | 366          | 10.14                      | 1.52 (1.37-1.68)   | 1.20 (1.08-1.33)                   |
| Alopecia areata                           | 21           | 6.32                       | 1.25 (0.82-1.91)   | 0.81 (0.53-1.24)                   |
| Vitiligo                                  | 18           | 7.34                       | 1.38 (0.87-2.19)   | 1.06 (0.67-1.69)                   |

HR=Hazard Ratio, CI=Confidential Interval

<sup>a</sup>HRs were adjusted for parental psychiatric history, maternal characteristics (parity, age at birth, highest education level,

cohabitation with a partner, residence, birth country) and birth characteristics (participant's sex, calendar year of birth).

eTable 13. Hazard ratios of specific mental disorder in offspring according to prenatal exposure to any paternal autoimmune disease diagnosed before childbirth.

| Exposures and outcomes         | No of events | rate per 1000 person years | HR (95% CI), crude | HR (95% CI), adjusted <sup>a</sup> |
|--------------------------------|--------------|----------------------------|--------------------|------------------------------------|
| <b>Any mental disorder</b>     |              |                            |                    |                                    |
| exposed                        | 3903         | 8.84                       | 1.30 (1.26-1.34)   | 1.09 (1.05-1.12)                   |
| unexposed                      | 303163       | 7.91                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Organic disorders</b>       |              |                            |                    |                                    |
| exposed                        | 52           | 0.11                       | 1.50 (1.14-1.97)   | 1.47 (1.12-1.93)                   |
| unexposed                      | 4099         | 0.10                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Substance use disorders</b> |              |                            |                    |                                    |
| exposed                        | 678          | 3.32                       | 1.12 (1.04-1.21)   | 1.06 (0.98-1.15)                   |
| unexposed                      | 73125        | 3.21                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Schizophrenia</b>           |              |                            |                    |                                    |
| exposed                        | 221          | 1.06                       | 1.37 (1.20-1.57)   | 1.16 (1.02-1.33)                   |
| unexposed                      | 20091        | 0.86                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Mood disorders</b>          |              |                            |                    |                                    |
| exposed                        | 500          | 2.42                       | 1.27 (1.16-1.39)   | 1.09 (1.00-1.19)                   |
| unexposed                      | 51369        | 2.22                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Neurotic disorders</b>      |              |                            |                    |                                    |
| exposed                        | 1251         | 3.79                       | 1.37 (1.30-1.45)   | 1.13 (1.07-1.19)                   |
| unexposed                      | 107264       | 3.37                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>OCD</b>                     |              |                            |                    |                                    |
| exposed                        | 138          | 0.41                       | 1.52 (1.29-1.80)   | 1.20 (1.01-1.42)                   |
| unexposed                      | 9671         | 0.30                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Eating disorders</b>        |              |                            |                    |                                    |
| exposed                        | 207          | 0.44                       | 1.35 (1.18-1.55)   | 1.17 (1.02-1.34)                   |
| unexposed                      | 16246        | 0.40                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Personality disorders</b>   |              |                            |                    |                                    |
| exposed                        | 290          | 1.39                       | 1.23 (1.10-1.39)   | 1.10 (0.98-1.23)                   |
| unexposed                      | 30381        | 1.31                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Intellectual disability</b> |              |                            |                    |                                    |
| exposed                        | 186          | 0.40                       | 1.01 (0.88-1.17)   | 0.96 (0.83-1.10)                   |
| unexposed                      | 14337        | 0.35                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Developmental disorders</b> |              |                            |                    |                                    |
| exposed                        | 508          | 1.09                       | 1.51 (1.39-1.65)   | 1.05 (0.96-1.14)                   |
| unexposed                      | 27429        | 0.67                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Childhood autism</b>        |              |                            |                    |                                    |
| exposed                        | 199          | 0.42                       | 1.69 (1.47-1.95)   | 1.12 (0.97-1.28)                   |
| unexposed                      | 8773         | 0.21                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Behavioral disorders</b>    |              |                            |                    |                                    |
| exposed                        | 1364         | 2.96                       | 1.41 (1.33-1.48)   | 1.08 (1.03-1.14)                   |
| unexposed                      | 81273        | 2.02                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>ADHD</b>                    |              |                            |                    |                                    |
| exposed                        | 763          | 1.93                       | 1.56 (1.46-1.68)   | 1.09 (1.02-1.17)                   |
| unexposed                      | 44091        | 1.21                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>ODD/CD</b>                  |              |                            |                    |                                    |
| exposed                        | 166          | 0.42                       | 1.29 (1.11-1.51)   | 1.11 (0.96-1.30)                   |
| unexposed                      | 10756        | 0.29                       | 1.00 (ref)         | 1.00 (ref)                         |

HR=Hazard Ratio, CI=Confidential Interval, OCD=Obsessive-Compulsive Disorder, ADHD=Attention Deficit/Hyperactivity Disorder, ODD/CD=oppositional defiant disorder/conduct disorder.

<sup>a</sup>HRs were adjusted for parental psychiatric history, maternal characteristics (parity, age at birth, highest education level, cohabitation with a partner, residence, birth country) and birth characteristics (participant's sex, calendar year of birth).

**eTable 14. Associations between specific maternal autoimmune diseases diagnosed before childbirth and overall mental disorders, adjusted for medications used by mothers before childbirth in addition to the variables in the main model.**

| Exposures                                 | No of events/rate per 1000 person years | HR (95% CI), crude | HR (95% CI), Model 1 | HR (95% CI), Model 2 | HR (95% CI), Model 3 |
|---|---|--------------------|----------------------|----------------------|----------------------|
| Any autoimmune diseases                   | 2562/8.97                               | 1.28(1.23-1.33)    | 1.21(1.17-1.26)      | 1.18(1.13-1.22)      | 1.16(1.11-1.20)      |
| Endocrine autoimmune diseases             | 876/9.01                                | 1.29(1.20-1.38)    | 1.23(1.15-1.32)      | 1.19(1.11-1.27)      | 1.18(1.10-1.26)      |
| Type 1 Diabetes                           | 394/10.73                               | 1.47(1.33-1.62)    | 1.31(1.19-1.45)      | 1.25(1.13-1.38)      | 1.24(1.13-1.37)      |
| Thyreotoxicosis                           | 405/8                                   | 1.15(1.05-1.27)    | 1.15(1.04-1.27)      | 1.12(1.02-1.24)      | 1.11(1.00-1.22)      |
| Autoimmune thyroiditis                    | 82/7.51                                 | 1.22(0.98-1.52)    | 1.27(1.02-1.57)      | 1.22(0.98-1.51)      | 1.20(0.97-1.49)      |
| Primary adrenocortical insufficiency      | 17/13.02                                | 2.02(1.26-3.25)    | 1.78(1.11-2.87)      | 1.73(1.08-2.78)      | 1.69(1.05-2.72)      |
| Connective tissue autoimmune diseases     | 432/9.81                                | 1.44(1.31-1.58)    | 1.33(1.21-1.46)      | 1.28(1.17-1.41)      | 1.26(1.15-1.39)      |
| Rheumatoid arthritis                      | 227/9.61                                | 1.41(1.24-1.61)    | 1.35(1.19-1.54)      | 1.30(1.14-1.48)      | 1.28(1.13-1.46)      |
| Juvenile arthritis                        | 125/10.84                               | 1.58(1.33-1.88)    | 1.30(1.09-1.55)      | 1.27(1.07-1.51)      | 1.27(1.06-1.51)      |
| Dermatopolymyositis                       | <6/3.12                                 | 0.45(0.15-1.35)    | 0.38(0.12-1.18)      | 0.37(0.12-1.14)      | 0.35(0.11-1.08)      |
| Polymyalgia rheumatica/temporal arteritis | <6/13.86                                | 2.22(0.93-5.33)    | 2.11(0.88-5.07)      | 2.04(0.85-4.89)      | 1.89(0.79-4.54)      |
| Scleroderma                               | 18/11.53                                | 1.68(1.06-2.67)    | 1.51(0.95-2.40)      | 1.49(0.94-2.36)      | 1.43(0.90-2.27)      |
| Systemic lupus erythematosus              | 54/9.77                                 | 1.41(1.08-1.84)    | 1.35(1.04-1.77)      | 1.30(0.99-1.69)      | 1.27(0.97-1.66)      |
| Sjögren syndrome                          | 20/10.17                                | 1.54(0.99-2.38)    | 1.42(0.91-2.20)      | 1.36(0.88-2.11)      | 1.33(0.86-2.07)      |
| Ankylosing Spondylitis                    | 35/8.19                                 | 1.26(0.90-1.75)    | 1.22(0.87-1.70)      | 1.17(0.84-1.63)      | 1.14(0.82-1.59)      |
| Wegener granulomatosis                    | <6/11.73                                | 1.76(0.67-4.66)    | 1.70(0.64-4.54)      | 1.63(0.61-4.34)      | 1.58(0.59-4.20)      |
| Gastrointestinal autoimmune diseases      | 802/8.37                                | 1.20(1.12-1.29)    | 1.15(1.07-1.23)      | 1.12(1.04-1.20)      | 1.10(1.02-1.18)      |
| Celiac disease                            | 72/9.2                                  | 1.42(1.13-1.79)    | 1.31(1.04-1.65)      | 1.29(1.02-1.62)      | 1.27(1.01-1.60)      |
| Crohn disease                             | 299/8.2                                 | 1.17(1.04-1.31)    | 1.06(0.95-1.19)      | 1.03(0.92-1.15)      | 1.01(0.90-1.13)      |
| Ulcerative colitis                        | 466/7.8                                 | 1.12(1.02-1.23)    | 1.10(1.01-1.21)      | 1.08(0.98-1.18)      | 1.06(0.96-1.16)      |
| Primary biliary cirrhosis                 | 7/18.2                                  | 2.71(1.30-5.66)    | 2.73(1.31-5.71)      | 2.62(1.25-5.47)      | 2.46(1.18-5.13)      |
| Autoimmune hepatitis                      | 40/13.4                                 | 1.92(1.41-2.61)    | 1.87(1.37-2.55)      | 1.83(1.34-2.49)      | 1.75(1.29-2.39)      |
| Blood autoimmune diseases                 | 72/8.22                                 | 1.18(0.93-1.48)    | 1.12(0.89-1.41)      | 1.10(0.87-1.38)      | 1.10(0.87-1.38)      |
| Pernicious anemia                         | 26/10.35                                | 1.53(1.04-2.24)    | 1.40(0.95-2.05)      | 1.37(0.93-2.01)      | 1.37(0.94-2.02)      |
| Autoimmune hemolytic anemia               | 6/7.9                                   | 1.11(0.50-2.47)    | 1.01(0.45-2.25)      | 0.98(0.44-2.18)      | 0.96(0.43-2.15)      |
| Idiopathic thrombocytopenic purpura       | 41/7.33                                 | 1.04(0.77-1.41)    | 1.01(0.74-1.37)      | 0.99(0.73-1.35)      | 0.99(0.73-1.35)      |
| Nervous system autoimmune diseases        | 206/9.81                                | 1.41(1.23-1.61)    | 1.32(1.15-1.51)      | 1.29(1.13-1.48)      | 1.24(1.08-1.42)      |
| Multiple sclerosis                        | 155/9.81                                | 1.44(1.23-1.68)    | 1.37(1.17-1.61)      | 1.35(1.15-1.58)      | 1.28(1.09-1.50)      |
| Guillain-Barré syndrome                   | 39/10.65                                | 1.42(1.04-1.94)    | 1.22(0.89-1.67)      | 1.21(0.88-1.65)      | 1.17(0.85-1.60)      |
| Myasthenia gravis                         | 14/8.19                                 | 1.11(0.66-1.87)    | 1.09(0.64-1.83)      | 1.04(0.62-1.76)      | 1.05(0.62-1.77)      |
| Skin autoimmune diseases                  | 278/9.95                                | 1.40(1.25-1.58)    | 1.25(1.11-1.41)      | 1.21(1.07-1.36)      | 1.19(1.06-1.34)      |
| Pemphigus                                 | <6/9.47                                 | 1.42(0.53-3.79)    | 1.06(0.40-2.83)      | 1.04(0.39-2.78)      | 1.00(0.37-2.66)      |
| Pemphigoid                                | <6/8.2                                  | 1.22(0.31-4.81)    | 0.95(0.24-3.79)      | 0.93(0.23-3.70)      | 0.88(0.22-3.50)      |
| Psoriasis vulgaris                        | 234/11.15                               | 1.56(1.37-1.78)    | 1.37(1.20-1.56)      | 1.31(1.16-1.49)      | 1.30(1.14-1.47)      |
| Alopecia areata                           | 26/6.54                                 | 0.93(0.64-1.37)    | 0.88(0.60-1.30)      | 0.85(0.58-1.24)      | 0.85(0.58-1.25)      |
| Vitiligo                                  | 16/6.32                                 | 0.91(0.56-1.48)    | 0.93(0.57-1.52)      | 0.91(0.56-1.49)      | 0.91(0.56-1.49)      |

HR=Hazard Ratio, CI=Confidential Interval

Model 1: adjusted for parental psychiatric history, maternal characteristics (parity, age at birth, highest education level, cohabitation with a partner, residence, birth country), birth characteristics (participant's sex, calendar year of birth).

Model 2: adjusted for medications for maternal autoimmune diseases used before or during pregnancy in addition to variables in Model 1.

Model 3: adjusted for medications for maternal mental diseases used before or during pregnancy in addition to variables in Model 2.

**eTable 15. Hazard ratios of specific mental disorder according to prenatal exposure to any maternal autoimmune disease, adjusted for medications used by mothers before childbirth in addition to the variables in the main model.**

| Exposures and outcomes         | No of events/rate per 1000 person years | HR (95% CI), crude | HR (95% CI), Model 1 | HR (95% CI), Model 2 | HR (95% CI), Model 3 |
|--------------------------------|---|--------------------|----------------------|----------------------|----------------------|
| <b>Any mental disorder</b>     |   |                    |                      |                      |                      |
| exposed                        | 2562/8.97                               | 1.28(1.23-1.33)    | 1.21(1.17-1.26)      | 1.18(1.13-1.22)      | 1.16(1.11-1.20)      |
| unexposed                      | 69899/7.56                              | 1.00 (ref)         | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>Organic disorders</b>       |   |                    |                      |                      |                      |
| exposed                        | 10/0.03                                 | 1.61(0.85-3.04)    | 1.61(0.85-3.03)      | 1.54(0.81-2.91)      | 1.53(0.81-2.89)      |
| unexposed                      | 220/0.02                                | 1.00 (ref)         | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>Substance use disorders</b> |   |                    |                      |                      |                      |
| exposed                        | 54/0.89                                 | 1.17(0.89-1.53)    | 1.12(0.86-1.47)      | 1.09(0.83-1.43)      | 1.09(0.83-1.42)      |
| unexposed                      | 2116/0.87                               | 1.00 (ref)         | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>Schizophrenia</b>           |   |                    |                      |                      |                      |
| exposed                        | 37/0.61                                 | 1.37(0.99-1.90)    | 1.30(0.94-1.80)      | 1.28(0.92-1.78)      | 1.27(0.92-1.77)      |
| unexposed                      | 1178/0.49                               | 1.00 (ref)         | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>Mood disorders</b>          |   |                    |                      |                      |                      |
| exposed                        | 85/1.41                                 | 1.14(0.92-1.42)    | 1.07(0.86-1.32)      | 1.04(0.84-1.29)      | 1.03(0.83-1.28)      |
| unexposed                      | 3246/1.34                               | 1.00 (ref)         | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>Neurotic disorders</b>      |   |                    |                      |                      |                      |
| exposed                        | 565/3.43                                | 1.45(1.33-1.57)    | 1.33(1.22-1.44)      | 1.27(1.17-1.38)      | 1.24(1.14-1.35)      |
| unexposed                      | 15555/2.68                              | 1.00 (ref)         | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>OCD</b>                     |   |                    |                      |                      |                      |
| exposed                        | 88/0.53                                 | 1.53(1.24-1.90)    | 1.42(1.15-1.76)      | 1.37(1.11-1.70)      | 1.34(1.09-1.67)      |
| unexposed                      | 2195/0.38                               | 1.00 (ref)         | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>Eating disorders</b>        |   |                    |                      |                      |                      |
| exposed                        | 90/0.3                                  | 1.24(1.01-1.53)    | 1.17(0.95-1.44)      | 1.13(0.92-1.40)      | 1.11(0.90-1.37)      |
| unexposed                      | 2777/0.29                               | 1.00 (ref)         | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>Personality disorders</b>   |   |                    |                      |                      |                      |
| exposed                        | 19/0.31                                 | 0.98(0.62-1.54)    | 0.90(0.57-1.41)      | 0.85(0.54-1.34)      | 0.84(0.53-1.33)      |
| unexposed                      | 880/0.36                                | 1.00 (ref)         | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>Intellectual disability</b> |   |                    |                      |                      |                      |
| exposed                        | 157/0.53                                | 1.17(1.00-1.37)    | 1.21(1.03-1.41)      | 1.18(1.01-1.39)      | 1.18(1.00-1.38)      |
| unexposed                      | 4347/0.46                               | 1.00 (ref)         | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>Developmental disorders</b> |   |                    |                      |                      |                      |
| exposed                        | 570/1.94                                | 1.28(1.18-1.39)    | 1.18(1.09-1.29)      | 1.16(1.07-1.26)      | 1.14(1.05-1.24)      |
| unexposed                      | 15110/1.59                              | 1.00 (ref)         | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>Childhood autism</b>        |   |                    |                      |                      |                      |
| exposed                        | 253/0.86                                | 1.33(1.17-1.51)    | 1.23(1.08-1.39)      | 1.21(1.07-1.38)      | 1.19(1.05-1.36)      |
| unexposed                      | 6166/0.65                               | 1.00 (ref)         | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>Behavioral disorders</b>    |   |                    |                      |                      |                      |
| exposed                        | 1301/4.47                               | 1.28(1.21-1.36)    | 1.22(1.16-1.29)      | 1.18(1.11-1.24)      | 1.16(1.09-1.22)      |
| unexposed                      | 34698/3.69                              | 1.00 (ref)         | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>ADHD</b>                    |   |                    |                      |                      |                      |
| exposed                        | 735/3.29                                | 1.32(1.23-1.43)    | 1.25(1.16-1.34)      | 1.20(1.11-1.29)      | 1.18(1.10-1.27)      |
| unexposed                      | 19437/2.59                              | 1.00 (ref)         | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>ODD/CD</b>                  |   |                    |                      |                      |                      |
| exposed                        | 106/0.47                                | 1.10(0.90-1.33)    | 1.10(0.90-1.33)      | 1.06(0.87-1.29)      | 1.05(0.86-1.27)      |
| unexposed                      | 3335/0.44                               | 1.00 (ref)         | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |

HR=Hazard Ratio, CI=Confidential Interval, OCD=Obsessive-Compulsive Disorder, ADHD=Attention Deficit/Hyperactivity Disorder, ODD/CD=oppositional defiant disorder/conduct disorder.

Model 1: adjusted for parental psychiatric history, maternal characteristics (parity, age at birth, highest education level, cohabitation with a partner, residence, birth country), birth characteristics (participant's sex, calendar year of birth).

Model 2: adjusted for medications for maternal autoimmune diseases used before or during pregnancy in addition to variables in Model 1.

Model 3: adjusted for medications for maternal mental diseases used before or during pregnancy in addition to variables in Model 2.

**eTable 16. Associations between specific maternal autoimmune diseases diagnosed before childbirth and overall mental disorders in offspring, with multiple imputation for missing data.**

| Exposures                                 | No of events | rate per 1000 person years | HR (95% CI), crude | HR (95% CI), adjusted <sup>a</sup> |
|---|--------------|----------------------------|--------------------|------------------------------------|
| Any autoimmune diseases                   | 5460         | 9.38                       | 1.41 (1.37-1.45)   | 1.17 (1.13-1.20)                   |
| Endocrine autoimmune diseases             | 2140         | 9.51                       | 1.37 (1.31-1.43)   | 1.19 (1.14-1.24)                   |
| Type 1 Diabetes                           | 1494         | 10.28                      | 1.32 (1.25-1.39)   | 1.24 (1.18-1.30)                   |
| Thyreotoxicosis                           | 545          | 8.16                       | 1.50 (1.38-1.63)   | 1.08 (0.99-1.17)                   |
| Autoimmune thyroiditis                    | 98           | 7.79                       | 1.70 (1.40-2.07)   | 1.16 (0.95-1.41)                   |
| Primary adrenocortical insufficiency      | 35           | 10.44                      | 1.51 (1.09-2.11)   | 1.29 (0.92-1.79)                   |
| Connective tissue autoimmune diseases     | 798          | 10.09                      | 1.60 (1.49-1.71)   | 1.24 (1.16-1.33)                   |
| Rheumatoid arthritis                      | 403          | 9.75                       | 1.57 (1.42-1.73)   | 1.25 (1.14-1.38)                   |
| Juvenile arthritis                        | 203          | 10.58                      | 1.73 (1.51-1.99)   | 1.16 (1.01-1.33)                   |
| Dermatopolymyositis                       | 15           | 7.29                       | 1.07 (0.65-1.78)   | 0.83 (0.50-1.38)                   |
| Polymyalgia rheumatica/temporal arteritis | 8            | 20.08                      | 4.75 (2.38-9.46)   | 2.85 (1.43-5.71)                   |
| Scleroderma                               | 30           | 11.06                      | 1.79 (1.25-2.55)   | 1.35 (0.94-1.92)                   |
| Systemic lupus erythematosus              | 125          | 10.83                      | 1.65 (1.38-1.96)   | 1.35 (1.13-1.60)                   |
| Sjögren syndrome                          | 27           | 9.82                       | 1.80 (1.24-2.62)   | 1.26 (0.86-1.84)                   |
| Ankylosing Spondylitis                    | 67           | 8.85                       | 1.43 (1.12-1.81)   | 1.14 (0.90-1.45)                   |
| Wegener granulomatosis                    | <6           | 7.39                       | 1.27 (0.48-3.35)   | 0.97 (0.36-2.58)                   |
| Gastrointestinal autoimmune diseases      | 1520         | 8.75                       | 1.38 (1.31-1.45)   | 1.11 (1.05-1.17)                   |
| Celiac disease                            | 106          | 9.38                       | 1.72 (1.42-2.07)   | 1.16 (0.96-1.40)                   |
| Crohn disease                             | 576          | 8.96                       | 1.43 (1.32-1.55)   | 1.09 (1.00-1.18)                   |
| Ulcerative colitis                        | 894          | 8.16                       | 1.27 (1.19-1.36)   | 1.06 (0.99-1.13)                   |
| Primary biliary cirrhosis                 | 12           | 22.15                      | 4.28 (2.45-7.47)   | 3.09 (1.75-5.44)                   |
| Autoimmune hepatitis                      | 76           | 13.1                       | 2.03 (1.62-2.54)   | 1.52 (1.21-1.90)                   |
| Blood autoimmune diseases                 | 138          | 9.14                       | 1.47 (1.24-1.73)   | 1.11 (0.94-1.31)                   |
| Pernicious anemia                         | 43           | 11.25                      | 1.92 (1.42-2.58)   | 1.32 (0.98-1.79)                   |
| Autoimmune hemolytic anemia               | 10           | 7.75                       | 1.26 (0.68-2.32)   | 0.91 (0.49-1.69)                   |
| Idiopathic thrombocytopenic purpura       | 87           | 8.56                       | 1.34 (1.09-1.65)   | 1.06 (0.86-1.30)                   |
| Nervous system autoimmune diseases        | 434          | 9.53                       | 1.41 (1.28-1.55)   | 1.18 (1.07-1.29)                   |
| Multiple sclerosis                        | 293          | 9.46                       | 1.45 (1.30-1.63)   | 1.22 (1.08-1.36)                   |
| Guillain-Barré syndrome                   | 116          | 10.56                      | 1.44 (1.20-1.72)   | 1.18 (0.98-1.41)                   |
| Myasthenia gravis                         | 30           | 7.42                       | 1.00 (0.69-1.44)   | 0.89 (0.62-1.27)                   |
| Skin autoimmune diseases                  | 578          | 10.31                      | 1.56 (1.44-1.70)   | 1.21 (1.11-1.31)                   |
| Pemphigus                                 | 7            | 10.6                       | 1.88 (0.91-3.91)   | 1.20 (0.57-2.52)                   |
| Pemphigoid                                | <6           | 10.5                       | 1.77 (0.67-4.68)   | 1.12 (0.42-2.99)                   |
| Psoriasis vulgaris                        | 491          | 11                         | 1.63 (1.49-1.78)   | 1.26 (1.16-1.38)                   |
| Alopecia areata                           | 56           | 7.85                       | 1.25 (0.96-1.61)   | 0.99 (0.76-1.29)                   |
| Vitiligo                                  | 24           | 6.79                       | 1.23 (0.83-1.82)   | 0.90 (0.61-1.35)                   |

HR=Hazard Ratio, CI=Confidential Interval

<sup>a</sup>HRs were adjusted for parental psychiatric history, maternal characteristics (parity, age at birth, highest education level, cohabitation with a partner, residence, birth country) and birth characteristics (participant's sex, calendar year of birth)



**eTable 17. Hazard ratios of specific mental disorder according to prenatal exposure to any maternal autoimmune disease, with multiple imputation for missing data**

| Exposures and outcomes         | No of events | rate per 1000 person years | HR (95% CI), crude | HR (95% CI), adjusted <sup>a</sup> |
|--------------------------------|--------------|----------------------------|--------------------|------------------------------------|
| <b>Any mental disorder</b>     |              |                            |                    |                                    |
| exposed                        | 5460         | 9.38                       | 1.41 (1.37-1.45)   | 1.17 (1.13-1.20)                   |
| unexposed                      | 303092       | 7.91                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Organic disorders</b>       |              |                            |                    |                                    |
| exposed                        | 71           | 0.11                       | 1.56 (1.23-1.97)   | 1.54 (1.22-1.95)                   |
| unexposed                      | 4117         | 0.10                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Substance use disorders</b> |              |                            |                    |                                    |
| exposed                        | 854          | 3.24                       | 1.10 (1.03-1.18)   | 1.05 (0.99-1.13)                   |
| unexposed                      | 73465        | 3.21                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Schizophrenia</b>           |              |                            |                    |                                    |
| exposed                        | 319          | 1.19                       | 1.54 (1.38-1.72)   | 1.36 (1.22-1.52)                   |
| unexposed                      | 20171        | 0.86                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Mood disorders</b>          |              |                            |                    |                                    |
| exposed                        | 657          | 2.47                       | 1.29 (1.19-1.39)   | 1.13 (1.04-1.22)                   |
| unexposed                      | 51512        | 2.22                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Neurotic disorders</b>      |              |                            |                    |                                    |
| exposed                        | 1723         | 4.01                       | 1.46 (1.40-1.53)   | 1.22 (1.16-1.28)                   |
| unexposed                      | 107385       | 3.37                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>OCD</b>                     |              |                            |                    |                                    |
| exposed                        | 213          | 0.49                       | 1.84 (1.60-2.10)   | 1.42 (1.24-1.63)                   |
| unexposed                      | 9623         | 0.30                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Eating disorders</b>        |              |                            |                    |                                    |
| exposed                        | 257          | 0.42                       | 1.31 (1.16-1.49)   | 1.13 (0.99-1.27)                   |
| unexposed                      | 16255        | 0.40                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Personality disorders</b>   |              |                            |                    |                                    |
| exposed                        | 374          | 1.40                       | 1.23 (1.11-1.36)   | 1.11 (1.00-1.23)                   |
| unexposed                      | 30538        | 1.31                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Intellectual disability</b> |              |                            |                    |                                    |
| exposed                        | 307          | 0.50                       | 1.27 (1.13-1.42)   | 1.18 (1.06-1.33)                   |
| unexposed                      | 14284        | 0.35                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Developmental disorders</b> |              |                            |                    |                                    |
| exposed                        | 755          | 1.23                       | 1.73 (1.61-1.86)   | 1.13 (1.05-1.22)                   |
| unexposed                      | 27272        | 0.67                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Childhood autism</b>        |              |                            |                    |                                    |
| exposed                        | 299          | 0.48                       | 1.94 (1.73-2.18)   | 1.20 (1.07-1.35)                   |
| unexposed                      | 8689         | 0.21                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>Behavioral disorders</b>    |              |                            |                    |                                    |
| exposed                        | 1998         | 3.30                       | 1.58 (1.51-1.65)   | 1.19 (1.13-1.24)                   |
| unexposed                      | 80984        | 2.01                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>ADHD</b>                    |              |                            |                    |                                    |
| exposed                        | 1099         | 2.12                       | 1.74 (1.64-1.85)   | 1.18 (1.11-1.25)                   |
| unexposed                      | 43929        | 1.21                       | 1.00 (ref)         | 1.00 (ref)                         |
| <b>ODD/CD</b>                  |              |                            |                    |                                    |
| exposed                        | 10766        | 0.29                       | 1.31 (1.15-1.50)   | 1.12 (0.98-1.28)                   |
| unexposed                      | 219          | 0.42                       | 1.00 (ref)         | 1.00 (ref)                         |

HR=Hazard Ratio, CI=Confidential Interval, OCD=Obsessive-Compulsive Disorder, ADHD=Attention Deficit/Hyperactivity Disorder, ODD/CD=oppositional defiant disorder/conduct disorder.

<sup>a</sup>HRs were adjusted for parental psychiatric history, maternal characteristics (parity, age at birth, highest education level,

cohabitation with a partner, residence, birth country) and birth characteristics (participant's sex, calendar year of birth)

**eTable 18. Associations between specific maternal autoimmune diseases diagnosed before childbirth and overall mental disorders in offspring, using propensity score methods.**

| Exposures                                 | HR (95% CI),<br>model 1 | HR (95% CI),<br>model 2 | HR (95% CI),<br>model 3 |
|---|-------------------------|-------------------------|-------------------------|
| Any autoimmune diseases                   | 1.16 (1.13-1.19)        | 1.18 (1.15-1.20)        | 1.19 (1.16-1.22)        |
| Endocrine autoimmune diseases             | 1.19 (1.14-1.24)        | 1.21(1.17-1.26)         | 1.23(1.18-1.28)         |
| Type 1 Diabetes                           | 1.24 (1.18-1.30)        | 1.24 (1.17-1.30)        | 1.25 (1.19-1.32)        |
| Thyreotoxicosis                           | 1.08 (0.99-1.17)        | 1.03 (0.97-1.09)        | 1.10 (1.01-1.20)        |
| Autoimmune thyroiditis                    | 1.18 (0.97-1.44)        | 1.10 (0.97-1.25)        | 1.26 (1.03-1.54)        |
| Primary adrenocortical insufficiency      | 1.27 (0.91-1.77)        | 1.28 (0.98-1.69)        | 1.30 (0.93-1.81)        |
| Connective tissue autoimmune diseases     | 1.24 (1.16-1.33)        | 1.22 (1.16-1.29)        | 1.27 (1.19-1.36)        |
| Rheumatoid arthritis                      | 1.25 (1.14-1.38)        | 1.19 (1.10-1.28)        | 1.27 (1.16-1.41)        |
| Juvenile arthritis                        | 1.15 (1.00-1.32)        | 1.07 (0.95-1.22)        | 1.18 (1.03-1.35)        |
| Dermatopolymyositis                       | 0.82 (0.50-1.36)        | 0.90 (0.57-1.41)        | 1.01 (0.61-1.67)        |
| Polymyalgia rheumatica/temporal arteritis | 2.82 (1.41-5.64)        | 4.69 (1.92-11.49)       | 3.50 (1.75-7.00)        |
| Scleroderma                               | 1.33 (0.93-1.90)        | 1.89 (1.43-2.48)        | 1.45 (1.02-2.08)        |
| Systemic lupus erythematosus              | 1.34 (1.13-1.60)        | 1.44 (1.25-1.65)        | 1.35 (1.14-1.61)        |
| Sjögren syndrome                          | 1.27 (0.87-1.85)        | 0.91 (0.64-1.29)        | 1.33 (0.91-1.94)        |
| Ankylosing Spondylitis                    | 1.15 (0.90-1.46)        | 1.13 (0.94-1.35)        | 1.20 (0.94-1.52)        |
| Wegener granulomatosis                    | 0.94 (0.35-2.50)        | 0.78 (0.22-2.82)        | 0.93 (0.35-2.48)        |
| Gastrointestinal autoimmune diseases      | 1.11 (1.05-1.17)        | 1.06 (1.02-1.10)        | 1.12 (1.06-1.18)        |
| Celiac disease                            | 1.17 (0.96-1.41)        | 1.02 (0.89-1.18)        | 1.21(1.00-1.47)         |
| Crohn disease                             | 1.08 (1.00-1.17)        | 1.24 (1.17-1.32)        | 1.10 (1.01-1.19)        |
| Ulcerative colitis                        | 1.07 (1.00-1.14)        | 0.97 (0.92-1.03)        | 1.07 (1.00-1.14)        |
| Primary biliary cirrhosis                 | 3.07 (1.75-5.41)        | 3.83 (1.83-7.99)        | 3.47 (2.00-6.04)        |
| Autoimmune hepatitis                      | 1.50 (1.20-1.88)        | 1.63 (1.31-2.03)        | 1.75 (1.40-2.20)        |
| Blood autoimmune diseases                 | 1.10 (0.93-1.30)        | 1.18 (1.03-1.34)        | 1.13 (0.95-1.33)        |
| Pernicious anemia                         | 1.31 (0.98-1.77)        | 1.45 (1.11-1.89)        | 1.34 (1.00-1.81)        |
| Autoimmune hemolytic anemia               | 0.91 (0.49-1.69)        | 1.60 (1.03-2.50)        | 0.90 (0.48-1.67)        |
| Idiopathic thrombocytopenic purpura       | 1.05 (0.85-1.30)        | 1.15 (0.98-1.35)        | 1.08 (0.87-1.33)        |
| Nervous system autoimmune diseases        | 1.17 (1.07-1.29)        | 1.17 (1.08-1.27)        | 1.20 (1.09-1.32)        |
| Multiple sclerosis                        | 1.21 (1.08-1.36)        | 1.16 (1.06-1.28)        | 1.23 (1.10-1.38)        |
| Guillain-Barré syndrome                   | 1.17 (0.98-1.41)        | 1.39 (1.17-1.65)        | 1.20 (1.00-1.44)        |
| Myasthenia gravis                         | 0.90 (0.63-1.28)        | 0.94 (0.67-1.31)        | 0.89 (0.63-1.28)        |
| Skin autoimmune diseases                  | 1.19 (1.10-1.29)        | 1.23 (1.15-1.32)        | 1.22 (1.13-1.33)        |
| Pemphigus                                 | 1.15 (0.55-2.42)        | 1.75 (0.78-3.94)        | 1.28 (0.61-2.69)        |
| Pemphigoid                                | 1.09 (0.41-2.89)        | 1.87 (0.75-4.65)        | 1.11 (0.42-2.96)        |
| Psoriasis vulgaris                        | 1.24 (1.14-1.36)        | 1.21 (1.12-1.31)        | 1.27 (1.16-1.39)        |
| Alopecia areata                           | 0.99 (0.76-1.29)        | 1.19 (0.98-1.43)        | 1.02 (0.79-1.33)        |
| Vitiligo                                  | 0.91 (0.61-1.36)        | 1.14 (0.84-1.54)        | 0.90 (0.60-1.35)        |

HR=Hazard Ratio, CI=Confidential Interval

Model 1: adjusted for parental psychiatric history, maternal characteristics (parity, age at birth, highest education level, cohabitation with a partner, residence, birth country) and birth characteristics (participant's sex, calendar year of birth)

Model 2: applied inverse probability weighting approach.

Model 3: adjusted propensity score directly

**eTable 19. Hazard ratios of specific mental disorder among individuals born to mothers with any autoimmune disease, using propensity score methods.**

| Exposures and outcomes         | HR (95% CI), model 1 | HR (95% CI), model 2 | HR (95% CI), model 3 |
|--------------------------------|----------------------|----------------------|----------------------|
| <b>Any mental disorder</b>     |                      |                      |                      |
| exposed                        | 1.16 (1.13-1.19)     | 1.18 (1.15-1.20)     | 1.19 (1.16-1.22)     |
| unexposed                      | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>Organic disorders</b>       |                      |                      |                      |
| exposed                        | 1.54 (1.21-1.94)     | 1.55 (1.31-1.82)     | 1.62 (1.28-2.06)     |
| unexposed                      | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>Substance use disorders</b> |                      |                      |                      |
| exposed                        | 1.05 (0.98-1.12)     | 1.11 (1.07-1.17)     | 1.11 (1.04-1.18)     |
| unexposed                      | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>Schizophrenia</b>           |                      |                      |                      |
| exposed                        | 1.35 (1.21-1.51)     | 1.47 (1.36-1.59)     | 1.41 (1.26-1.57)     |
| unexposed                      | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>Mood disorders</b>          |                      |                      |                      |
| exposed                        | 1.12 (1.04-1.21)     | 1.17 (1.11-1.24)     | 1.15 (1.07-1.24)     |
| unexposed                      | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>Neurotic disorders</b>      |                      |                      |                      |
| exposed                        | 1.21 (1.16-1.27)     | 1.21 (1.17-1.25)     | 1.24 (1.18-1.30)     |
| unexposed                      | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>OCD</b>                     |                      |                      |                      |
| exposed                        | 1.42 (1.24-1.63)     | 1.42 (1.27-1.58)     | 1.45 (1.26-1.66)     |
| unexposed                      | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>Eating disorders</b>        |                      |                      |                      |
| exposed                        | 1.12 (0.99-1.27)     | 1.12 (1.02-1.24)     | 1.13 (1.00-1.28)     |
| unexposed                      | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>Personality disorders</b>   |                      |                      |                      |
| exposed                        | 1.10 (1.00-1.22)     | 1.22 (1.14-1.30)     | 1.17 (1.06-1.30)     |
| unexposed                      | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>Intellectual disability</b> |                      |                      |                      |
| exposed                        | 1.19 (1.07-1.34)     | 1.32 (1.20-1.45)     | 1.25 (1.12-1.40)     |
| unexposed                      | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>Developmental disorders</b> |                      |                      |                      |
| exposed                        | 1.14 (1.06-1.23)     | 1.14 (1.06-1.22)     | 1.17 (1.09-1.26)     |
| unexposed                      | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>Childhood autism</b>        |                      |                      |                      |
| exposed                        | 1.21(1.08-1.36)      | 1.23 (1.08-1.39)     | 1.23 (1.10-1.38)     |
| unexposed                      | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>Behavioral disorders</b>    |                      |                      |                      |
| exposed                        | 1.19 (1.14-1.25)     | 1.23 (1.18-1.28)     | 1.22 (1.17-1.28)     |
| unexposed                      | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>ADHD</b>                    |                      |                      |                      |
| exposed                        | 1.19 (1.12-1.26)     | 1.20 (1.13-1.27)     | 1.23 (1.16-1.30)     |
| unexposed                      | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |
| <b>ODD/CD</b>                  |                      |                      |                      |
| exposed                        | 1.13 (0.98-1.29)     | 1.28 (1.14-1.43)     | 1.18 (1.03-1.35)     |
| unexposed                      | 1.00 (ref)           | 1.00 (ref)           | 1.00 (ref)           |

HR=Hazard Ratio, CI=Confidential Interval, OCD=Obsessive-Compulsive Disorder, ADHD=Attention Deficit/Hyperactivity Disorder, ODD/CD=oppositional defiant disorder/conduct disorder.

Model 1: adjusted for parental psychiatric history, maternal characteristics (parity, age at birth, highest education level, cohabitation with a partner, residence, birth country) and birth characteristics (participant's sex, calendar year of birth)

Model 2: applied inverse probability weighting approach.

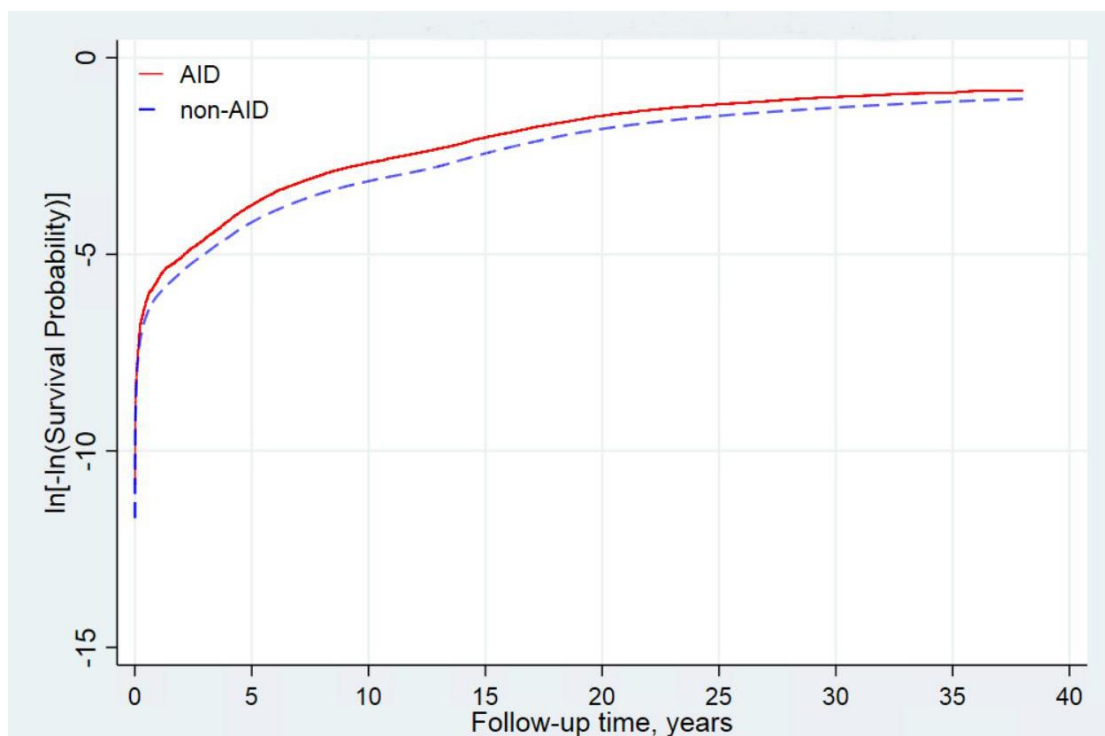
Model 3: adjusted propensity score directly

**eTable 20. Association between overall maternal autoimmune diseases diagnosed before childbirth and suicide in offspring.**

| exposures and outcomes | No of events | rate per 1000 person years | HR (95% CI), crude | HR (95% CI), adjusted <sup>a</sup> |
|------------------------|--------------|----------------------------|--------------------|------------------------------------|
| <b>Suicide</b>         |              |                            |                    |                                    |
| Exposed                | 33           | 0.05                       | 1.35 (0.96-1.90)   | 1.11 (0.79-1.57)                   |
| unexposed              | 2317         | 0.06                       | 1.00 (ref)         | 1.00 (ref)                         |

HR=Hazard Ratio, CI=Confidential Interval.

<sup>a</sup>HRs were adjusted for parental psychiatric history, maternal characteristics (parity, age at birth, highest education level, cohabitation with a partner, residence, birth country) and birth characteristics (participant's sex, calendar year of birth).



**eFigure 1. The log-minus-log survival curve. AID=autoimmune disease**