Project description for DST application

TODO: Delete above title header before sending to DST.

**Forskningsservice** **Dato** September 30, 2021 Projekt nr. 708421/ kontaktperson i Forskningsservice

TODO: Fix kontaktperson line.

## Autoriseret institution / Authorised institution

Enhedschef Annelli Sandbæk  
Steno Diabetes Center Aarhus (inst. nr. 574)  
Hedeager 3, 2. sal  
8200 Aarhus  
Denmark

## Projekttitel / Project title

Interplay between diabetes and intergenerational transmission of health determinants over the life course

## Projektbeskrivelse / Project description

The overall aim of this project is to identify the contributions of family and early life determinants on the development, management, and care of diabetes and the diseases that may arise following a diabetes diagnosis, under a life-course framework.

Diabetes is a complex, multi-factorial disease. Its development depends on the timing and accumulation of exposures throughout the life-course. In addition to genetic influences, behavioral risk factors and socioeconomic conditions cluster in families and are passed through generations. For instance, poor childhood socioeconomic status (SES) can impact final educational attainment, adult SES, and lifestyle and behavioral characteristics, which ultimately influence an individual’s metabolic capacity to regulate glucose and subsequent risk for diabetes.

This project will contribute to a broader and deeper understanding of the role that these factors play with the development and progression of diabetes. For this purpose, we will apply causal and predictive statistical methods to best use the data available from the integrated data sources with an overarching goal to model several potential public health strategies that might impact the prevention and management of diabetes and the diseases that follow its diagnosis.

## Population / Population

In order to identify familial relations through individuals’ life course trajectory, the population requested covers all individuals, who live or lived in Denmark from 1 January 1970 to 31 December 2020 (~8.5 million people). The family linkage and structure makes the construction of the population complicated and we will do this ourselves. For that we need the entire population because we need data on not just the individual, but also the family (parents and siblings). To characterise early life and early childhood conditions of an individual person, we need data on their parents. Likewise, to understand the role that the family network, including siblings and grandparents, has on diabetes risk, we need a large enough population to make these linkages and to adequately study this area. Key requirements are:

* All index individuals born or who migrated into Denmark on or after 1970-01-01.
* All family members of the index individuals, including parents, siblings, spouses, and children.

## Variabelindhold / Variables included

All variables can be de-identified (direct identification is not needed). The list of requested variables is found in the tables at the end of the document in the Appendix. For all the variables, we need the data from the first year it is available to the most recent year it is available.

Registers requested are:

* AKM: Arbejdsklassifikationsmodulet / The work classification module
* BEF: Befolkningen / The population
* CPST: CPR Status / Civil Registration Status
* DOD: Døde i Danmark / Died in Denmark
* DODSAARS: Dødsårssagsregistret / Cause of death register
* DODSAASG: Dødsårsagsregister / Cause of death register
* FAIK: Familieindkomster / Family income
* FAIN: Husstande og familier / Households and families
* FTBARN: Fertilitet - børn / Fertility - children
* FTDB: Fertilitetsdatabasen børn / Fertility database children
* FTDK: Fertilitetsdatabasen paritetsfil kvinder / Fertility database parity file women
* FTDM: Fertilitetsdatabasen paritetsfil mænd / Fertility database parity file men
* FTFORAEL: Fertilitet - forælder / Fertility - parent
* IDAN: IDA ansættelser / IDA employment
* IDAP: IDA persondata / IDA person data
* IEPE: Indvandrere og Efterkommere / Immigrants and Descendants
* IND: Indkomst / Income
* LMDB: Lægemiddeldatabasen / The drug database
* LPR\_ADM: Landspatientregistret - administrative oplysninger / National Patient Register - administrative information
* LPR\_BES: Landspatientregistret - ambulante besøgsdatoer / National Patient Register - outpatient visit dates
* LPR\_DIAG: Landspatientregistret - diagnoser / National Patient Register - diagnoses
* LPR\_OPR: Landspatientregistret - operationer efter ICD8 klassifikationen / National Patient Register - operations according to the ICD8 classification
* LPR\_SKSOPR: Landspatientregistret - operationer / National Patient Register - operations
* LPR\_SKSUBE: Landspatientregistret - undersøgelser og behandlinger / National Patient Register - examinations and treatments
* LPRMFRDF: Dødfødte ud fra LPR / Stillbirths from LPR
* LPRMFRLF: Levendefødte ud fra LPR / Live births from LPR
* SHSS: Sammenhængende socialstatistik / Coherent social statistics
* SSNV: Sammenhængende socialstatistik nettovarigheder / Coherent social statistics net durations
* SSSY: Sygesikring (6-cifret) / Health insurance (6-digit)
* SYSI: Sygesikring (sikringsgruppe) / Health insurance (group)
* UDDA: Uddannelser (BUE) / Education (BUE)
* VNDS: Historiske vandringer / Historical migration

In the Appendix we listed the ATC codes from the prescription register and ICD-8 and -10 codes from the patient register that we need to classify diabetes and the diseases that may arise following a diabetes diagnosis.

## Særligt vedr. lægemiddelsdata / Especially regarding drug data

The medication data we are requested are used in order to identify cases of disease (e.g. diabetes) that might not have been diagnosed and recorded in the patient register. The list of requested ATC codes is found in the Appendix section.

## Offentliggørelse af resultater / Publication of results

Results will be published in open access scientific outlets and presented at scientific conferences.

## Perspektivering / Perspective

Understanding how early life and familial factors can influence diabetes provides us with tools and knowledge to better target, intervene, and either prevent or manage diabetes and its complications. Considering the impact that diabetes as a disease itself and its related comorbidities has at the personal, public health, and economic level, any improvement in knowledge can have major impacts.

## Data som ikke kommer fra Danmarks Statistik / Data that doesn’t come from DST

Data coming from other sources (e.g. Sundhedsdatastyrelsen):

* Cancerregisteret: Cancerregisteret / Cancer Register
* DBDD: Dansk Børne Diabetes Database / Danish Childrens Diabetes Database
* Diabase: Diabase / Diabase
* DND: Det Nationale Diabetesregister / National Diabetes Register
* DVDD: Dansk Voskne Diabetes Database / Danish Adults Diabetes Database
* IVF: IVF-registeret / In vitro fertilization register
* LABKA: Clinical data / Clinical data
* LPR\_PSYK: Landspatientregistret – psykologi / National Patient Register - psychological

## Projekts slutdato / Project’s end date

Date of deletion of data: Access to data is requested until 2030-12-31.

## Autoriserede forskere / Authorised scientists

TODO: Add in relevant missing info before sending.

| **Navn** | **Stillingsbetegnelse** | **Ansættelsessted (Institution & Afdeling)** | **Ident** | **Email** | **Mobil** | **Fysisk token ønskes** | **Hjemsendelse tillades** | **Brugeraftale på engelsk** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Kontaktperson** | | | | | | | | |
| Luke W. Johnston | Clinical researcher | Steno Diabetes Center Aarhus |  | luke.johnston@rm.dk |  | Nej | Nej | Ja |
| **Øvrige personer** | | | | | | | | |
| Omar Silverman | Clinical researcher | Steno Diabetes Center Aarhus |  | jossil@rm.dk |  | Nej | Nej | Ja |
| Daniel R. Witte | Professor | Steno Diabetes Center Aarhus and Institute for Public Health, Aarhus University |  | daniel.witte@ph.au.dk |  | Nej | Nej | Ja |
| Gunnar Toft | Senior Researcher | Steno Diabetes Center Aarhus |  | guntof@rm.dk |  | Nej | Nej | Nej |
| Adam Hulman | Senior Data Scientist | Steno Diabetes Center Aarhus |  | adahul@rm.dk |  | Nej | Ja | Ja |
| Annelli Sandbæk | Unit Manager | Steno Diabetes Center Aarhus |  | anesnd@rm.dk |  | Nej | Ja | Nej |
| Anders Aasted Isaksen | PhD Student | Department of Public Health, Aarhus University |  | aai@ph.au.dk |  | Nej | Nej | Nej |

## Underskrift / Signatures

Underskriver bekræfter på vegne af den dataansvarlige autoriserede institution, at den konkrete behandling er lovlig i henhold til databeskyttelsesforordningen artikel 6.

Underskriver bekræfter ligeledes at være formelt ansat på den dataansvarlige autoriserede institution, der indstiller projektet.

**På vegne af den dataansvarlige:**

TODO: Add signature before sending.

|  |  |
| --- | --- |
| Navn: | Annelli Sandbæk |
| Stilling: | Enhedschef |
| Dato: |  |
| Underskrift: |  |

**Godkendt til ekstern adgang**

|  |  |
| --- | --- |
| Navn: | Nikolaj Borg Burmeister |
| Stilling: | Kontorchef |
| Dato: |  |
| Underskrift: |  |