Ethical and social aspects of personalized medicine

- Patient and family experiences

Laura Emdal Navne, Senior researcher

Paris, ICPerMed 6. October 2022

VIVE

Agenda

- Background
- Some ethical concerns
- Datasociality: The role of genetic databases and Facebook in diagnosing children with rare diseases
- Destigma: Patients experiences of new genetic disease labels.

The study 1: Where

Ethnographic study (2017- ongoing) of the use of exome and WGS in diagnosing children with rare diseases and adults with diabetes in Denmark

Clinical genetics:

Children demonstrate developmental delays and cognitive and social challenges in school

Long diagnostic journeys

Diabetes research and treatment:

The research project ‘TRANSLATE’

TRANSLATE aims to identify and re-diagnose 1-2 % of the type 2 diabetes population with the rare genetic variants

MODY 3 mutation in the GCK-gene

MODY 2 mutation in the HNF1α-gene

A subtype of diabetes that does not benefit from standard treatment

(MODY: ”Maturity-Onset Diabetes of the Young”)

The study 2: How and who

- Observations of 35 genetic counselling sessions
- Interviews with 25 patients and families
- Interviews with 20 clinicians

The Danish context

- Publicly financed healthcare
- National strategy for personalized medicine, 2016
- Establishment of National Genome Center (NGC) as government agency, 2019
- Novo Foundation gave one billion to collect 60.000 genomes in NGC

Ethical concerns

- Does genetic knowledge create more fear, anxiety and medicalization?

Konrad, M. 2005. Narrating the New Genetic Predictive Genetics. Ethics, Ethnography and Science. Cambridge University Press
Timmermans and Buchbinder 2013: Saving Lives? Chicago: Chicago University Press
Cambrosio, A., P. et al. 2018. Extending Experimentation: Oncology's Fading Boundary between Research and Care. New Genetics and Society 37: 207–26

Of course we wanted to know everything, to be able to act on it, and to act in time.

We only want to know, if a treatment exists

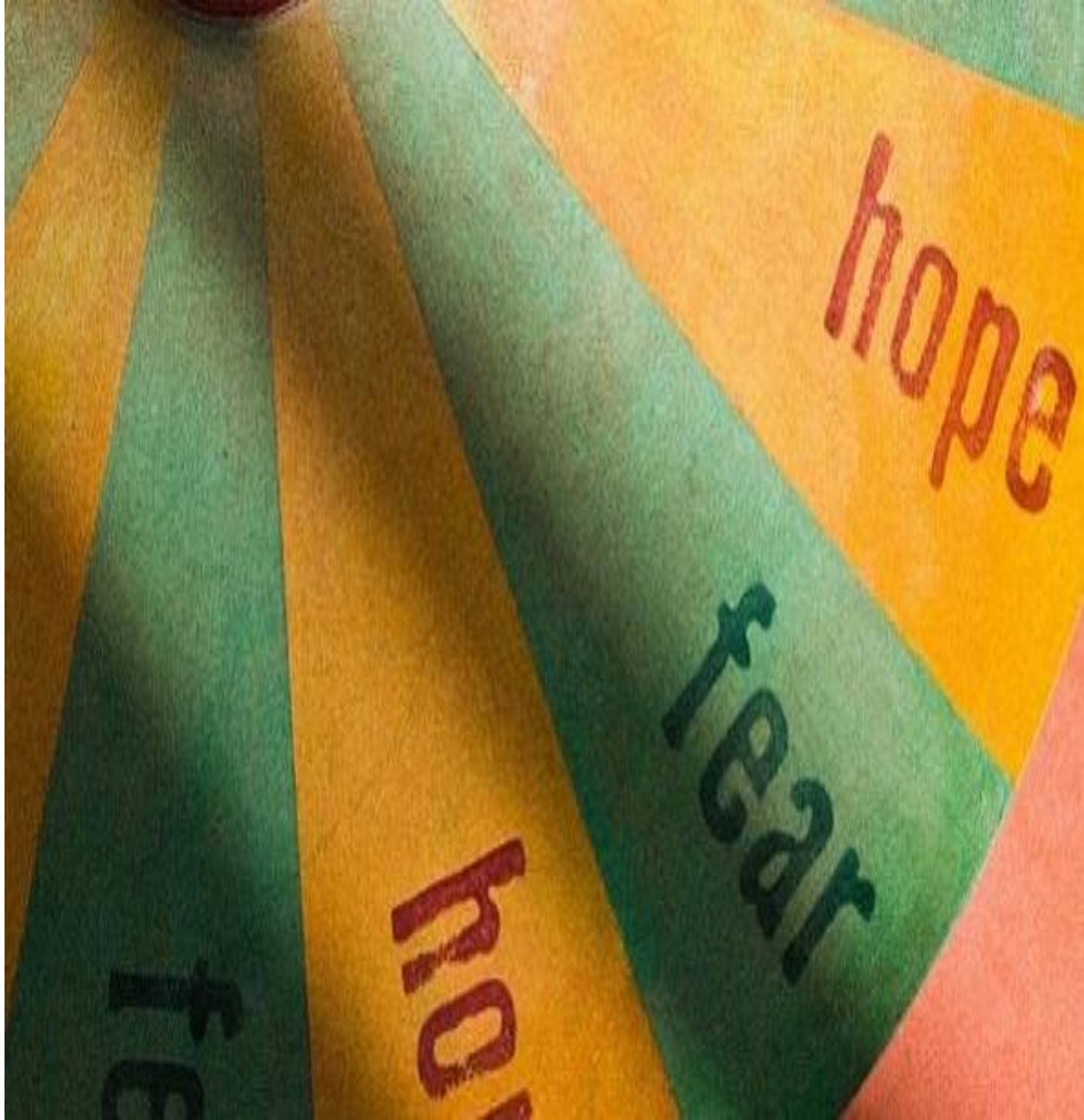
Interview with patients about consent for exome and WGS

We wanted to know everything. And we were disappointed when the doctor told us on the phone: ”We didn’t find anything, but we only looked cursory and we didn’t stumble over anything”. It would have been nice if they had made an effort to explore in more depht …

Interview with dad of 8 year old boy with unknown pathology

Critical ethical take-home message

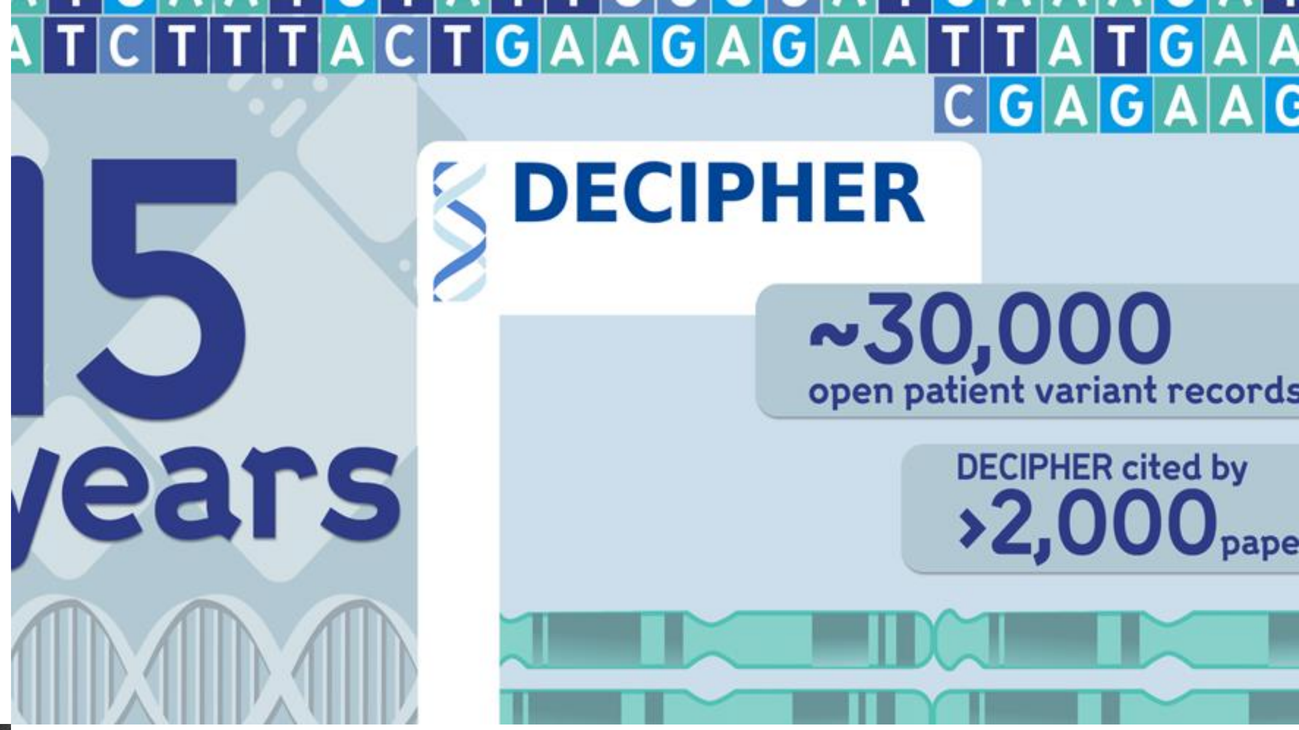
- Crucial to create realistic expectations to what genomic medicine can achieve and offer

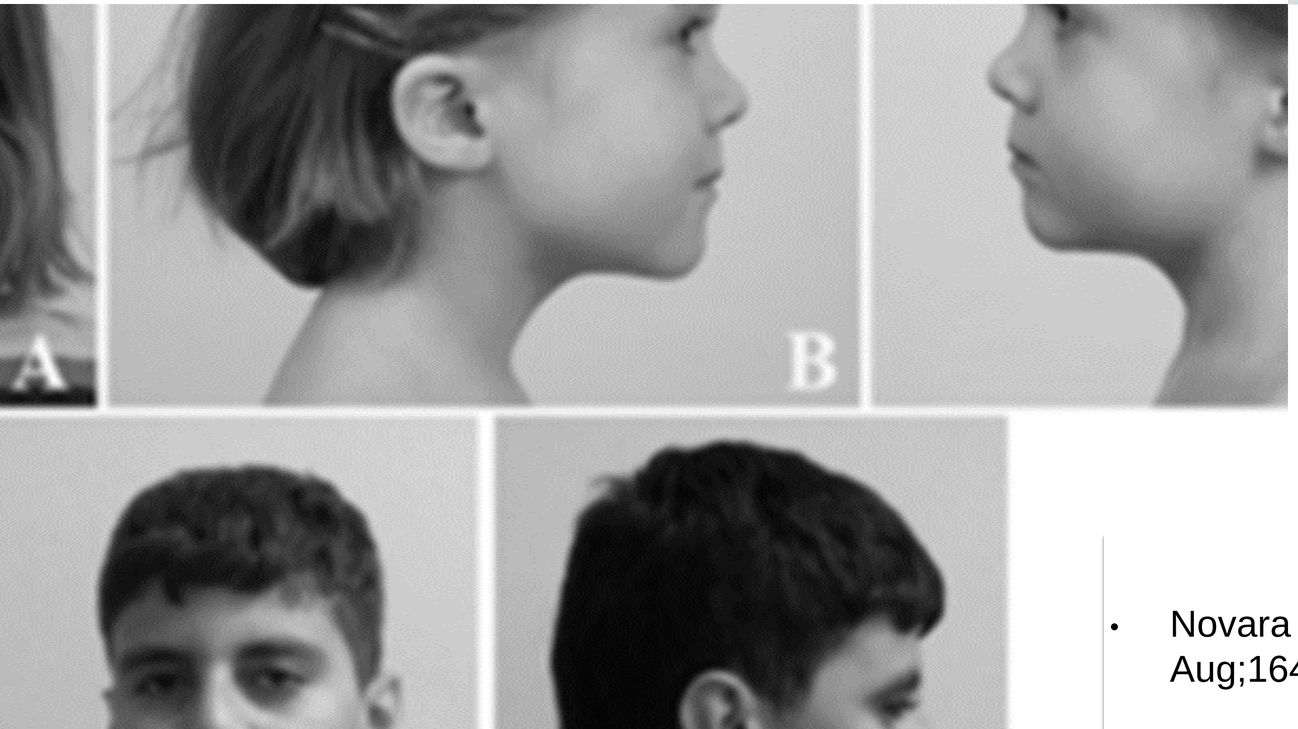


Datasociality

- What is the role of genetic databases and Facebook in diagnosing children with rare diseases?
- What forms of communities emerge between children with rare disease in this diagnostic process?

- For doctors to diagnose a child with a rare genetic disease, they need to compare one child's data with the data of multiple other children, while respecting each child's right to remain anonymous.





- Many genomic variants are *de novo mutations* and make clinical interpretation difficult and genotype-phenotype correlations uncertain
- International genetic databases contain information on mutations found in hundreds of thousands of individuals and help link gene and disease.

- Novara F, Stanzial F, Rossi E, et al. Am J Med Genet A. 2014 Aug;164A(8):2084-90.

Parents use of Facebook in diagnostics

- After 10 years, Piet’s parents find a “match” on Facebook
- Parent’s Facebook sharing of Baby photos help doctors find the disease carrying genetic variation

De novo kin

- Piet and Peter experiences sameness in a way common among kin members who share descent
- Children with rare diseases may experience an affinity with strangers that is close to a form of ‘de novo kin’ or genetic siblingship

> *During the genetic counselling session, Peter was presented with profile pictures of a girl with a variant in the same gene EBF3 as himself. He exclaimed, ‘Mom, she looks exactly like me, except for the long hair”!‘. His mother commented, ‘My son has much more in common with this stranger girl, whom we’ve never met, than with his biological siblings’.*

Peter, eighteen years old, physical and cognitive disabilities

Summary datasociality

- Diagnosing children with rare diseases depend on large scale data sharing
- Sometimes parents beet the clinicians in finding a diagnose using Facebook
- In the process of both sharing data and securing anonymity, unrelated children become related
- the concept of ‘datasociality’ captures the new forms of sociality that emerge with the work of linking children carrying the same de novo mutation with the help of various digital mediators

Navne, L. E., & Svendsen, M. N. (2022). De novo kin: sharing data, shielding persons, and forging relatedness in precision medicine. *Journal of the Royal Anthropological Institute*.

Destigma

Patient experiences of new genetic diagnosis

How do patients use, experience and make sense of new genetic disease labels?

Listen Simon, we've found an explanation for why you're different. You know, why you find school work difficult and all that…?' [The geneticist, Esther, finds a piece of paper and writes, 'DPF2', and says], 'Yes, I know that it is a strange name and it doesn't mean anything and you don't have to remember the name. This does not change who you are as a person

Fieldnote CLINICAL GENETICS

G246A is the name of the genetic variation you have. It is not important that you remember the name. What is important is that if we are right about this it means… that you will not develop diabetic complications and you will respond poorly to medical treatment. Therefore, we believe you should NOT take medication. Then you are healthy [rask] (…).

Fieldnote: TRANSLATE, DIABETES

Classic theory on disease categorization

- What labeling and naming does to people and their identities
- ‘Making-up-people’: social change creates new categories and “kinds” of people and the people come to fit their categories
- Disease labels are loaded with social and cultural meaning that carries a transformative potential affecting personal identity.

What does new genetic labeling do?

Hacking, I. 1986. *Making Up People*. Hacking, I. 1995. "The Looping Effects of Human Kinds. (Pp. 351–394). Clarendon Press/Oxford University Press." In *Causal Cognition: A Multidisciplinary Debate*, edited by D. Sperber, D. Premack and A. J. Premack, 351-394. Oxford University Press.

Laura: Do you think this new diagnosis has made a difference in Simon's life?

Inge: Yes! Certainly. Like, the other children at his boarding school, they either have ADHD or autism. It's a school for children with special needs. Here, I believe it's been good for Simon to have a name. For instance, this winter Simon failed the exam. Now, with the diagnosis, we can articulate that he needs help next year. Simon can say, 'It's because I have this syndrome'. He doesn't have to just say, 'I'm not very good at Danish or math'. So, if we can find a way to use this in a constructive way, and not just think that now you have this label attached... then I think it makes sense for Simon.

Interview, mother of Simon 16-year old boy with DPF2

Laura: What did it mean to you to hear that you had a MODY-variant?

Lotte: It meant that I no longer needed to feel ashamed if I crave chocolate or cake because when I tell people I have diabetes then their face says, ”How can you eat candy and sugar when you have diabetes, you are not supposed to” [indignant tone of voice] Often I chose not to tell people I have diabetes. Then it turns out I don’t have diabetes and that made me so happy that I don’t need to feel different.

Interview, woman recently rediagnosed from Type 2 diabetes to MODY

New genetic labels enable creative identity work

- Patients and families found their labels so “odd”, “forgettable”, “empty” and “thin” that they could somehow use – and not use – them as they saw fit.
- “Patients” come to see themselves as not sick (diabetes patients) and to re-negotiate social relationships with the state (families of children with developmental problems).
- In eclectic and creative ways, the patients and families interchangeably use and mobilize disease labels or immobilize the labels to achieve membership in certain collectivities while deactivating or ‘downplaying’ the labels and refusing memberships in others.

Dina was diagnosed with type 2 diabetes at the age of 12, but sometimes a new doctor would suggest maybe she was a type 1. In an interview with Dina, I mention the vision of personalized medicine to target treatment to the individual based on genetic testing.

Dina promptly responded, 'That's exactly what this is about! Genetic testing can do what no other health care person has ever been able to do before. They [health care staff] have generally considered me a ***serial number*** *and misrecognized my accounts of how my body responds [to the medicine and blood sugar levels].'*

Interview with Dina, 50 years-old

Summary destigma

- These new disease labels carry no history and no heavy social and cultural meaning.
- The “emptiness” of the labels make patients feel that they do not define or determine who they are or who they ought to be.
- Patients can fill their new diagnosis with their own understanding of their body symptoms, and disease.
- Getting a genetic label offers a relief from moral regimes or stigma and an acknowledgement that they are neither dysfunctional families nor non-compliant diabetics.

For discussion

- Should we talk more about the important work of translating genetic knowledge to patients?
- Ask patients what they imagine genetic knowledge can be used for
- What does parental use of Facebook in diagnosing their child imply for future data governance –how can/should government agencies compete or interact with data on Facebook?
- To what degree is the success of patients feeling ”one of a kind” in PM research and diagnosis related to the time, attention and acknowledgement granted them? What are the costs?

Thank you!

Patients and families

Clinicians and researchers

TRANSLATE, PrimeProject

VIVE, MeInWe, Copenhagen University

Funding: Carlsberg Foundation, Innovation Fund Denmark