

Workshop Program

Monday

09:00 – 10:00 **Arrival and Registration**

10:00 – 10:15 **Welcome Session**

Prof. Dr. Silke Schicktanz
Prof. Dr. Mats Hansson

10:15 – 11:15 **Keynote**

Prof. Dr. Julie Downs
Risk Perception and Communication for Genetic Risk Information
Chair: Prof. Dr. Silke Schicktanz

11:15 – 12:25 **Panel I - Practical Problems**

Chair: Prof. Dr. Mats Hansson

Dr. Rebecca J. Stack et al.
Perceptions of testing to predict future development of RA amongst the first degree relatives of people with RA: a qualitative exploration

Dr. des. Sabine Wöhlke
“Who gets that?” Limits of patients’ communication and self-determination in biomarker research

11:15 – 12:25 **Panel II - Professionals’ Perspectives**

Chair: Dr. Heidi Howard

Dr. Maria Falahee et al.
Healthcare professionals’ perceptions of genetic testing and genetic risk: a qualitative meta-synthesis

Sofia Lavén, MD
Cardiovascular disease risk communication in primary care

12:30 – 13:30

Lunch

14:00 – 15:00

Keynote

Prof. Dr. Ralph Hertwig
How we reckon with risk

Chair: Prof. Dr. Claudio Lucchiari

15:00 – 16:30

Coffee Break

16:30 – 18:15

Panel III - Information from a Conceptual Perspective

Chair: Dr. Ulrik Kihlbom

Dr. Julia Inthorn
A philosophical perspective on genetic risk information: the example of preconceptional genetic carrier screening

Prof. Dr. Gabriella Pravettoni
Dr. Serena Oliveri

Selfhood, disease and genetic risk experience from a phenomenological perspective

Dr. Heidi Howard
The experiences and views of health care professionals and researchers regarding the feed-back of results in the context of next generation sequencing in oncology

16:30 – 18:15

Panel IV - Measuring Decisions

Chair: Dr. Frederic Boudier

Dr. Claudio Lucchiari
Giving sense to an uncertain world: decision making in the era of personal genomic information

Caroline Vass, M. Sc. et al.
Investigating the framing of risk attributes in a discrete choice experiment: an application of eye-tracking and think aloud

Jennifer Viberg, M. Sc.
Designing a Discrete Choice Experiment to investigate research participants' preferences regarding genetic risk information

18:30 – 19:30 **Keynote**

Dr. Katie Featherstone
The individual, the family and the clinic: making sense of genetic risk

Chair: Dr. Julia Inthorn

20:00 **Conference Dinner**

Tuesday

9:30 – 10:30 **Keynote**

Dr. Muireann Quigley
Influencing decisions

Chair: Prof. Dr. Silke Schicktanz

10:30 – 11:00 **Coffee Break**

11:00 – 12:30 **Guided Tour: Old Masters Picture Gallery**

12:30 – 13:30 **Lunch**

13:30 – 14:40 **Panel V - Guiding Decisions - Underlying Norms**

Chair: Dr. Mark Schweda

Dr. Ulrik Kihlbom
What to balance in risky treatment decisions?

Prof. Dr. Silke Schicktanz
Responsibility in the era of genetic risk: conceptual considerations

- 13:30 – 14:40 **Panel VI - Who should decide?**
- Chair: Dr. des. Sabine Wöhlke
- Prof. Dr. Mats Hansson
Let the market of individuals directly concerned decide – a solution to tragic choices in genetic risk information
- Dr. Frederic Boudier
Genetic risk tolerance: concepts and challenges for policy
- 14:45 – 15:45 **Keynote**
- Prof. Dr. Sven Ove Hansson
Risk assessment – philosophical aspects
- Chair: Dr. Julia Inthorn
- 16:00 – 16:30 **Final Discussion and Outlook**
- 16:30 – 17:00 **Coffee Break**
- 17:00 – 18:30 **Internal MTR Project Meeting**

Keynote

Julie Downs (Pittsburgh):

Risk Perception and Communication for Genetic Risk Information

There are two important, inter-related questions worth considering when communicating about risks, especially unfamiliar ones. The first is how do people conceptualize and think about the risk, and the second is how do we explain the risk to people. In the best of circumstances, we understand the former well and use that understanding to guide the latter. However, far too often the first step gets ignored, and communicators deliver risk information that has little chance of being fully understood. Risk information in any domain poses numerous challenges involving comprehension, starting with basic understanding of probabilistic information, especially low-likelihood risks, compounded by preferences of medical professionals for formulations and formats (e.g., 1/N) that may not be as intuitive to less technical audiences. Additional challenges arise in deciding how best to apply risk information to one's own choices. Genetic risk information, in particular, includes several important factors that undermine risk perceptions. Genetic risk is new and unfamiliar to many, revealed by emerging technological tools to deliver probabilistic information about immutable and intangible characteristics that have the potential to cause grave harm. All of these aspects of genetics tend to increase the "dread" factor, leading to inflated perceptions of risk. This can make risk communication difficult even when the risk calculation itself is relatively straightforward, as in cases of Mendelian inheritance patterns or chromosomal abnormalities. But genetic diagnoses are increasingly based on complex risk factors, whether it is a chromosome microarray deletion or duplication, or a gene like BRCA 1 or 2 that increases risk for developing cancer. Additionally, as genomic medicine takes hold, the complexities involved in interpreting and acting on risk information have the potential to make comprehension and action even more difficult. As genetic information becomes more available and more routine, it is imperative to gain a better understanding of how people understand the risks and how trained professionals can better communicate them.

Panel I – Practical Problems

Rebecca Stack, Marie Falahee, Michaela Stoffer, Tanja Stamm, Gwenda Simons, Chris Buckley, Kanta Kumar, Mats Hanson & Karim Raza (Birmingham):

Perceptions of testing to predict future development of RA amongst the first degree relatives of people with RA: A qualitative exploration

Early treatment of rheumatoid arthritis (RA) improves clinical outcomes. There is increasing recognition of the need to identify people at risk of RA to monitor the emergence of early symptoms, offer lifestyle advice to reduce the impact of risk factors (such as smoking) and potentially offer preventive treatment. The family members of people with RA are at an increased risk of developing RA and are likely candidates for predictive testing. However, we do not know how the relatives of people with RA feel about tests to predict their risk of developing RA in the future. Twenty-four first degree relatives (8 siblings and 16 adult offspring aged between 18 and 67 years) of patients with RA were invited to take part in semi-structured interviews. The interviews explored first-degree relatives' perceptions of 'risk' of RA and the use of tests to predict their future risk of developing RA. Relatives were aware of their susceptibility to developing RA, but were unsure of the extent of their risk. When considering their future risk, first degree relatives were anxious and concerned about the potential impact RA would have on their lives. This anxiety was often heightened by their observations of the difficulties their relative with RA faced. Some were concerned that knowing their risk would increase their anxiety and would have a large impact of the decisions they made about their future. Many felt that they were lacking important information about their susceptibility to RA and were concerned about the levels of uncertainty associated with predictive testing. Some were opposed to testing and felt predictive information would have a negative impact on their lives. Those in favour of knowing their future risk felt that they would need additional support to understand the risk information, make decisions about their future and cope with the emotional impact of this information. In order for predictive testing to be valuable in the management of RA, the

development of strategies to communicate risk information effectively whilst reducing the emotional burden associated with this information is essential.

Sabine Wöhlke (Göttingen):

“Who gets that?” Limits of patients’ communication and self-determination in biomarker research

Background: Currently, genetic-prognostic (biomarker) tests are being developed aiming at treatment optimization by which patients will be stratified according to their susceptibility to an illness or their response to treatment. These clinical trials require patients to deal with a plethora of very technical information. Neither patients’ (mis-) conceptions concerning the content of this clinical trial nor patients’ possible impairment of self-determination has been sufficiently analyzed in the context of informed consent.

Research question: To which extent do genetization and complex technization influence oncology patients’ understanding of treatment and of self-determination?

Methods: By means of content analysis we analyzed: a) three semi-structured interviews over the entire course of 26 rectal cancer patients’ treatment and b) 38 non-participatory observations of treatment and trial consent procedure.

Results: Technization of medical information leads to considerable misconceptions among patients. We can illustrate three main results:

- *Technization and genetization of medical information:* Often there is a lack of everyday language for describing the plethora of technical and genetic information. The lack of patients’ comprehension of medical-technical information involves the danger of not being able to carry out informed consent procedures.
- *Therapeutic misconception:* With the emphasis of genetics we often witnessed therapeutic misconception including confusion of the clinical trial and standard treatment or the concrete benefits for the patient and his/her family.
- *Indirect influence of physicians concerning consent to the clinical trial:* During the informed consent consultations for clinical trial participation patients do not perceive their physicians in the researcher role. Physicians have certain leitmotifs and strategies for motivating patients for clinical trial participation.

The socio-empirical findings indicate the necessity of differentiated and comprehensible informed consent procedures for participation in clinical trials that include genetic diagnostics/biomarkers. This is necessary to enable different patient groups to better understand this complex information and thus enable them to make informed decisions.

Panel II – Professionals’ Perspectives

Marie Falahee, Gwenda Simons, Karim Raza, Rebecca Stack (Birmingham):

Healthcare professionals’ perceptions of genetic testing and genetic risk: A qualitative meta-synthesis

Advances in genomic technologies and a growing trend towards stratified approaches to medicine mean that increasing numbers of individuals will have access to information about their genetic makeup, and their risk of developing diseases. This is likely to impact on healthcare professionals involved in the delivery of genetic tests, or supporting patients who are affected by a disease with a genetic risk factor. It is therefore important to understand healthcare professionals’ perceptions about providing these services in a range of healthcare contexts, and how they feel about communicating information about genetic risk to patients. This paper provides a meta-synthesis of the relevant qualitative research literature, in order to identify overarching themes across studies. Practical barriers, particularly knowledge and resource deficits, were identified. Ethical and moral tensions relating to patient autonomy were frequent themes. These were particularly associated with misunderstanding of genetic risk, management of the uncertainty of genetic data, and the possibility of incidental findings. These practical and ethical barriers need to be addressed in order to enable the development of an infrastructure ready to support the widespread application of genomics in healthcare systems.

Sofia Lavén (Uppsala):

Cardiovascular disease risk communication in primary care

Cardiovascular disease (CVD) is globally, as well as in Sweden, the most common disease and cause of death. Risk of CVD is determined by a combination of lifestyle and genetic factors. In order to optimise risk reduction and prevent CVD, it is essential to communicate CVD risk. Traditionally risk communication in general in health care has focused on probabilistic information and how the patient perceives such information, which is also the case concerning CVD risk communication.

This PhD-project aims at gaining knowledge on CVD risk communication in primary care with a focus on the experiences and attitudes of general practitioners (GPs). Both qualitative and quantitative methodology is used in the project. The results from focus group interviews with GPs will be presented and discussed. How do GPs discuss CVD risk with their patients? What is the role of probabilistic information and what other aspects are important?

Keynote

Ralph Hertwig (Berlin):

How We Reckon With Risk

How can the risks of the modern world be communicated transparently? Effective risk communication is no longer a closed book. In the last decade or two, basic research in psychology has been able to provide important insights into how objective risks can best be presented in comprehensible form. In the context of medical decisions, for example, it is now known that presenting risks in relative terms can be confusing, whereas stating risks in absolute terms clarifies the situation. However, what worries people or sets their mind at rest is not dependent solely on the objective risk of an outcome. Many other psychological factors such as emotions, the catastrophic potential and chronicity of a risk, the way through which it has been learned (experience vs. description) determine how risky an outcome is subjectively perceived. In this talk, I will review the current state of the art on risk perception and will also discuss ways in which people reckon with risks, for instance, via the decision to abstain from knowledge (adaptive ignorance).

Panel III – Information from a Conceptual Perspective

Julia Inthorn (Göttingen):

A philosophical perspective on genetic risk information: The example of preconceptional genetic carrier screening

Preconceptional genetic carrier tests can inform couples if they are both carriers of the same autosomal recessive disease and thus learn about their risk of getting an affected child in case they are planning a pregnancy. This paper takes the newly developed test as a starting point for an in-depth analysis of the notion of genetic risk information from a philosophical perspective. In a first step, the main aspects of genetic risk information in preconception genetic counselling are analysed. Results show that every day notions of risk as well as the understanding of risk information as the probability of a negative event might not be adequate for the context of preconception genetic carrier information.

In a second step, theoretical approaches to risk from sociology (Niklas Luhmann, Ulrich Beck) and the difference between danger and risk are analysed for their potential to inform the debate on genetic risk. The understanding of genetic risk is situated within in modern societies where risks are ubiquitous. Sociological theories point at the relevance of technological developments for the understanding of risk. It will be discussed how technological development, genetic risk and notions of medicalization are related in the context of preconception care and how normative aspects such as the right not to know can be integrated in this framework.

Gabriella Pravettoni, Dr. Serena Oliveri (Milano):

Selfhood, disease and genetic risk experience from a phenomenological perspective

Studies in branch of genetics and related disciplines seem not to have the methodological tools and conceptual categories to capture the fascinating uniqueness of our human being.

When we ask “who” a person is, unless we want to keep a purely “extrinsic” characteristic of his being, we refer to his identity. The gene often recalls the image of something indefinable that belongs to the human body and that deeply impacts on individual in his biological and identity aspects, either as a single being or as part of a genetic line (his biological group).

In this study we aim to propose the hermeneutic phenomenological approach, and its main theoretical constructs, as the perspective with which to investigate the relation between the individual perception of having an inherited predisposition and the sense of himself. Using interpretative phenomenological analysis we also aim to investigate results in literature, through the detailed analysis of participants’ verbal reports in previous studies. This study is an attempt to examine how people make sense of their inherited risks, it offers an in-depth understanding of the personal experience and brings into focus some aspects of human being that may be overlooked or taken for granted.

Heidi Carmen Howard, Alexandra Soulier, Aurélie Mahalatchimy, and Anne Cambon-Thomsen (Uppsala):

The experiences and views of health care professionals and researchers regarding the feed-back of results in the context of next generation sequencing in oncology

Next generation sequencing (NGS) allows the production of large volumes of sequence data (and potentially genetic results) and the ethical and practical issues regarding feed-back of results become particularly pertinent to address. Should (any) individual results be given to research participants? If so, which results and who should provide them? Within two EU funded projects in oncology (CAGEKID and EUROTARGET), in order to gather researchers' and health care professionals' views and experiences on providing results we distributed a questionnaire to attendees of genetics meetings in Europe in 2013.

Of the 95 respondents, 88% work as researchers and/or clinicians in a field related to oncology and half (52%) use NGS in some aspect of their work; 56% of respondents state that they provide specific information about NGS to participants or patients before enrolling them in a study or using their samples for sequencing. The majority, 83% had never received requests from physicians or patients for access to NGS data to inform treatment decisions. Regarding feedback of results in a research setting, 54% of respondents think that results stemming from NGS studies should be provided to individual participants and 72% think that actionable incidental findings should be disclosed to participants. Finally, 53% of respondents think that specific measures and/or limitations should be implemented for the sharing of NGS data/results with colleagues in the scientific community. Such empirical data from stakeholders is a valuable contribution to the ongoing discussion of how to responsibly handle and feedback results to patients and research subjects. With respect to the Mind the Risk project, these results are pertinent in that an important part of the current uncertainty (and risk) surrounding the use of high throughput approaches, like whole genome sequencing, pertains to unsolicited findings and how to manage them.

Panel IV – Measuring Decisions

Claudio Lucchiari (Milano):

Giving sense to an uncertain world: decision making in the era of personal genomic information

People are naturally information-seekers and within a proper frame they are able to use it for a positive accommodation that potentially results in psychological growth. However, negative changes may also occur as well as decision making impasses. From a cognitive point of view, information may be considered the input that the human mind uses to explore the environment, to develop coping strategies and to take advantageous decisions.

What kind of cognitive input is personal genomic information? We argue that the answer to a similar question is particularly important, since it involves relevant issues: health-related decision making, life expectancies, emotional wellbeing, moral values and so on. Genes may be considered and disclosed as a symbol of one's uniqueness. Consequently, many people wish to know what kind of genetic mutations they have, also starting by a poor scientific knowledge. Furthermore, genetic information management may be linked to the idea of a modern individual as an agent in charge of his/her health and physical and emotional empowerment, i.e. the effective mobilization of cognitive, emotional and social resources in response to risk or threat. It can be manifested behaviorally and/or psychologically and may be considered the consequence of a human tendency to know the ideal path to personal well-being.

People, in this view, should become empowered citizens, who do not passively accept experts and doctors' decrees, but search for information and, ideally, use it to take aware decisions. Approaching this issue, Foster and colleagues (2009) have given an interesting contribution by introducing the concept of the utility of personal genomic information, including all potential consequences in terms of positive changes in lifestyle, in family and social dynamics, in the perception of risk disease and perception of control and self-determination. This utility should be considered a shared value, since relatives and proxy play generally a relevant role in life decisions. Consequently, it is not only important to understand the effect of personal genomic information of a single person, but also the distributed process that involves the entire system in which an individual acts.

In the next future, more and more people will become "patient-in-waiting": perfectly healthy, but in the waiting list of a given disease. Personal genomics

information will potentially give access to some dystopian small-world. How can we manage this unavoidable process so to translate the hazard of free-running genomic data in an opportunity for personal empowerment, so to foster better decisions and psychological wellbeing?

We argue that a definition of a more complex cognitive frame is needed in order to understand the real impact this kind of information may have on personal and systemic decisions and to implement cognitive-driven tool to help citizens and policy makers to take rational decisions in an uncertain world.

Caroline Vass, Dan Rigby, Stephen Campbell, Kelly Tate, Andrew Stewart⁴, Katherine Payne (Manchester):

Investigating the framing of risk attributes in a discrete choice experiment: an application of eye-tracking and think aloud

Purpose: To understand how the communication of risk in a discrete choice experiment (DCE) affects respondents' decision making heuristics and strategies.

Method: An on-line pilot DCE was designed to understand the preferences of female members of the public (recruited by posters in local cafes) for a breast screening programme described by three attributes (probability of detecting a cancer, risk of unnecessary treatment, and out-of-pocket cost) each with four levels. Two survey versions were used that varied how the risk attributes (probability of detecting a cancer and risk of unnecessary treatment) were presented as: (1) a percentage or (2) a percentage and icon array. Two approaches were used to understand how, and if, these risk communication methods affected respondents' decision making strategies: eye-tracking and retrospective think aloud cognitive interviews. Eye-movements were recorded as a series of co-ordinates 1,000 times a second. Eye-tracking data were analysed in terms of direction of motion and total visual attention (dwell time) to pre-defined areas of interest using descriptive statistics. Immediately after completing the last choice question, respondents were asked a series of debriefing questions. Qualitative data were analysed using thematic analysis. The effect of each attribute on the women's preferences were analysed using a conditional logit model.

Result: Twenty female members of the public completed the DCE and fifteen completed the DCE in the eye-tracking experiment. Respondents gave significantly more visual attention, indicating information processing, to both risk attributes when risk was communicated with an icon array rather than solely as a percentage with a mean dwell time of 6316 and 5043 milliseconds, respectively. Respondents to the icon array version also exhibited significantly more upwards and downwards eye-movements (43% v 38% of saccades) suggesting calculations were made in line with expected utility theory possibly reflecting a greater understanding of the risk information. The eye-tracking data confirmed the self-reported attribute non-attendance as stated by respondents when asked the de-briefing questions with significantly lower (by almost 70%) mean dwell times to these attributes. The results of the conditional logit revealed both probability of detecting a cancer and the risk

of unnecessary treatment were significant in women's decision to partake in breast screening.

Conclusion: This pilot study demonstrates that eye-tracking can be used as a method to further understand DCE responses. The pilot study also highlights the impact attribute framing can have on respondents' decision making strategies and choices.

Jennifer Viberg (Uppsala):

We get the answer we deserve – a development of a DCE questionnaire for participants in cardiovascular disease

It is unclear if disclosure of genetic risk information, such as incidental findings can be beneficial for research participants. However, studies show that some participants want to receive individual genetic risk information. Reasons for participants' willingness to receive genetic risk information include: it may help to treat or prevent disease; it can motivate a change of behavior, it is interesting to learn more about one's genes; it creates a feeling of having control of one's life; and it can provide a base to make a life plan.

Studies need to take the complexity of risk into account. Participants need to be confronted with the complexity of uncertainty to make a choice in the context of trade-offs. Therefore we will use the method Discrete Choice Experiment (DCE).

The Swedish CARDioPulmonary bioImage Study (SCAPIS) aims to build a nationwide, open-access, population-based cohort for the study of cardiovascular disease. The initial pilot trial SCAPIS Wellness Profiling will include 100 participants from Gothenburg and within this study we want to examine participants' preferences to genetic risk information. To be able to conduct a DCE we need to find the right attribute and levels. This is the draft of questions for the two focus group interviews of research participants.

Personal information

Demographic information

Risk related questions

Age, sex, education, annual income

smoking, alcohol, experience of other drugs, speeding ticket, and practitioner of any extreme sport

Questions for discussion

Do you want to know individual genetic risk information?

Different possible content:

Size of the risk, analytic valid, confirmed with other studies, if the information is unexpected or incidental, penetrance, severity of the disease, treatment or prevention available, when the disease may

<i>How do you want the information presented?</i>	occur, additional risk to know, increasing responsibility to family or insurance companies
<i>From whom do you want the information?</i>	Information by letter, phone call, next research meeting, extra meeting Presentation of the information: figures, relative or absolute number
<i>What are you ready to pay for this personal risk information?</i>	The researcher, medical professions, my physician Free, 100, 500, 1000, 10000 kr

Keynote

Katie Featherstone (Cardiff):

The Individual, the Family and the Clinic: making sense of genetic risk

This paper will provide an overview of current knowledge, present original empirical findings to explore how families live with genetic risk and suggests the potential impacts of new forms of genetic knowledge. It will examine the processes of decision-making and disclosure among family members who have or are at risk of transmitting a familial genetic condition. Its aim is to generate substantive theory that can inform our understandings of the interactional processes at work in the distribution of mutual knowledge and awareness within families and the ways in which it becomes embedded in the everyday frameworks of family life. It will go on to explore the future challenges for research and the increasing need for generic analyses of the intersection of genetic risk and family life that go beyond case-studies based on specific genetic conditions. The significance of this will only increase as the range of physical, mental health and behavioural features that are identified as having a genetic component continues to expand, for example, the use of GWAS to identify susceptibility genes for common complex polygenic conditions and new generation sequencing and mutation testing for rare syndromes. The world of genetic medicine, and the everyday lifeworlds of families are complex. They are traversed by the new knowledge of genetic medicine and the cultural knowledge of family, kinship and inheritance.

Keynote

Muireann Quigley (Bristol):

Nudging, Genetic Risk, & the Ethics of Shaping Health-related Decisions

“Interest by Government and policy-makers in behavioural approaches to health are not wholly novel. Nevertheless, they have of late displayed renewed attention to behavioural research in an attempt to achieve a range of policy goals, including health promotion. In particular, approaches which could be labelled as ‘nudges’ have gained traction with policy-makers. Nudge strategies attempt to change a person’s behaviour by altering the contexts in which we make decisions. To this end they try to harness or eliminate our cognitive biases. Just one example of a nudge which is pertinent to genetic risk is the framing effect - the way that information is presented can affect the decisions that people make. Thus, the framing of information about genetic risk or susceptibility to disease has the potential influence a patient’s decision regarding testing or treatment. Given this, should information be presented in a way which is designed to nudge the patient in one direction or another? A range of objections to nudging have been raised in the literature. This paper explores some of these issues with a particular focus on genetic risk and the health care context.

Panel V – Guiding decisions – Underlying Norms

Ulrik Kihlbom (Uppsala):

What to balance in risky treatment decisions?

Patients with Acute Myeloid Leukaemia (AML) face different alternatives of treatment that involve different risks and chances of cure, depending on age and phase in the illness trajectory. For instance, elderly patient may face the difficult choice between potentially curative, but toxic, remission induction chemotherapy and a palliative approach. Younger AML patients in remission may face a hard decision between standard chemotherapy or transplantation with allogeneic stem cells, the latter involving higher risks of quite gruesome side effects but better promises of cure. Patient with relapsed AML, or refractory to standard chemotherapy, may be offered experimental therapy as an alternative to only supportive care.

Relating results of a recent interview study concerning haematologists' conceptions of risk communication with more theoretical considerations regarding risks and value, this paper will discuss what to balance in these kinds of risky treatment decisions. It will be argued that one of the most challenging features in communicating such risks and making risky treatment decisions is to get a sufficiently adequate understanding of how it will be like to experience such side effects. Furthermore, this stresses the importance of including narrative/phenomenological approaches in research concerning pharmacogenetic risks.

Silke Schicktanz (Göttingen):

Responsibility in the era of genetic risk: conceptional considerations

Responsibility is an important normative term to describe, understand and formulate moral assumptions related to the individual and social handling of risk. In the context of genetic risk, the term 'responsibility' has received a new attention in medicine, social sciences and applied ethics by problematizing on the one hand the increased addressing of 'self-responsibility' of patients and citizens. On the other hand, the responsibility concept are used to describe the moral and policy language of family responsibility in case of disclosure, family planning, and even public prevention of late-onset diseases. The paper will examine in-depth the basic structure of this relational, meta-ethical concept by identifying the underlying assumptions of moral agency, morally relevant social relationships, and the temporal dimension of such agency. By this, it provides a heuristic matrix for analysing moral and public languages of risk management and risk prevention by taking the particular context of genetic knowledge production and genetic information sharing into account.

Panel VI – Who should decide?

Dr. Mats G. Hansson (Uppsala):

Let the market of individuals directly concerned decide – a solution to tragic choices in genetic risk information

Genetic risk information typically involves *pros* and *cons*, e.g. the possibility of a correct diagnosis or a beneficial treatment versus the possibility of an incorrect diagnosis, a non-beneficial treatment or serious adverse reactions due to the seemingly inevitable presence of false positives and false negatives related to drug response. As argued by FDA in their shut down of *23andMe* marketing, “...if the BRCA-related risk assessment for breast or ovarian cancer reports a false positive, it could lead a patient to undergo prophylactic surgery, chemoprevention, intensive screening, or other morbidity-inducing actions, while a false negative could result in a failure to recognize an actual risk that may exist”. In other cases, e.g. in screening for cardiopulmonary risks, a potential benefit may be that the individual diagnosed with increased relative risk levels may change life style in order to reduce health risk, but it may as well only induce anxiety and lower levels of quality of life.

Typically decisions about appropriate risk levels for genetic information is decided by expert committees, health and technology assessment boards and, regarding justification of research, ethical review boards. An alternative would be to let the directly concerned individuals decide for themselves when they want treatment, identify their genotypes and participate in risky research, e.g. at what odds ratio of sensitivity and specificity they are willing to gamble. Drawing on the seminal contribution of Calabresi & Bobbit regarding tragic choices I will suggest that one acceptable solution for who should make these decisions on life and death would be the market, as when people are allowed to drive cars in Sweden despite the fact that 450 individuals die every year in traffic accidents.

Frederic Boudier (Maastricht):

Genetic risk tolerance: concepts and challenges for policy

The translation of the results of the Human Genome Project into medical uses and the promises of using personal genomics in predictive and precision medicine has urged to achieve a better understanding of how people perceive genetic risks and the extent to which individuals and societies may accept to live with this knowledge. This paper is an exploratory attempt to reflect on the key concepts developed by the risk research community over fifty years, such as 'individual' and 'societal' risk, 'risk acceptability' and 'risk tolerability'. These concepts may prove helpful, yet challenging to tackle genetic 'risk tolerance'. The paper is primarily based on desktop research supplemented by semi-structured elite interviews, which were conducted with national and European medicines regulators, geneticists, Industry, social scientists interested in genetic risk as well as members of patient organisations, all directly involved in policy. These interviews offer a variety of key stakeholders' views on the topic. After a theoretical discussion of the concepts involved, with a particular focus on individual versus societal risk, the paper will introduce the first attempt to hypothesise how key elements of individual and societal risk analyses may influence genetic risk tolerance. As a conclusion, the author will offer simple guiding principles to support forthcoming policy-making in the area of genetic risk.

Key Note

Sven Ove Hansson (Stockholm):

Risk assessment – philosophical aspects

It is generally accepted in society that risk assessment should take the form of weighing risks against benefits. However, it is much less clear how this should be done. I will focus on three ethical dilemmas that are all important for the assessment and management of genetic risks.

Individual and collective risk. Whose risks should be weighed against whose benefits? There are two major answers to that question. In conventional risk analysis, collective risk-weighing is the standard. This means that all benefits are added up, irrespectively of whom they accrue to, and weighed against all risks, irrespectively of whom they fall to. Thus, an advantage for you can justify that I am exposed to a risk. In clinical medicine, a much stricter criterion for risk acceptance is applied, namely that the risk to which each individual is exposed should be outweighed by benefits for that same individual. Some genetic risks (such as those of ionizing radiation) are evaluated according to the principles of standard risk assessment in some situations and those of clinical ethics in other situations. This clash between principles can give rise to ethical problems that we have to deal with.

Group-based assessment of individual risk. When we say that the risk for a particular person is such-and-such, we usually only have grounds for saying that the person belongs to a particular group, and that the probability of the effect in question is such-and-such for an average member of the group. But the person may not be typical for the particular group that we have placed her in. This becomes particularly important when patients are offered highly individualized treatment, such that we do not have groups large enough for meaningful risk evaluations.

Protection of sensitive groups. For some risks, groups of persons can be identified that are more sensitive than others. For instance, there are age and sex differences in the susceptibility to some genetic risks. However, most criteria for protection are based on the average individual or on healthy male workers. If we want to protect the more sensitive individuals we can either implement stricter regulations for all, or introduce special regulations for the sensitive groups. The former method has the disadvantage of being more expensive, whereas the latter may have the disadvantage of leading to discrimination in the labour market. The choice between these modes of protection is largely an ethical issue.

Notes

