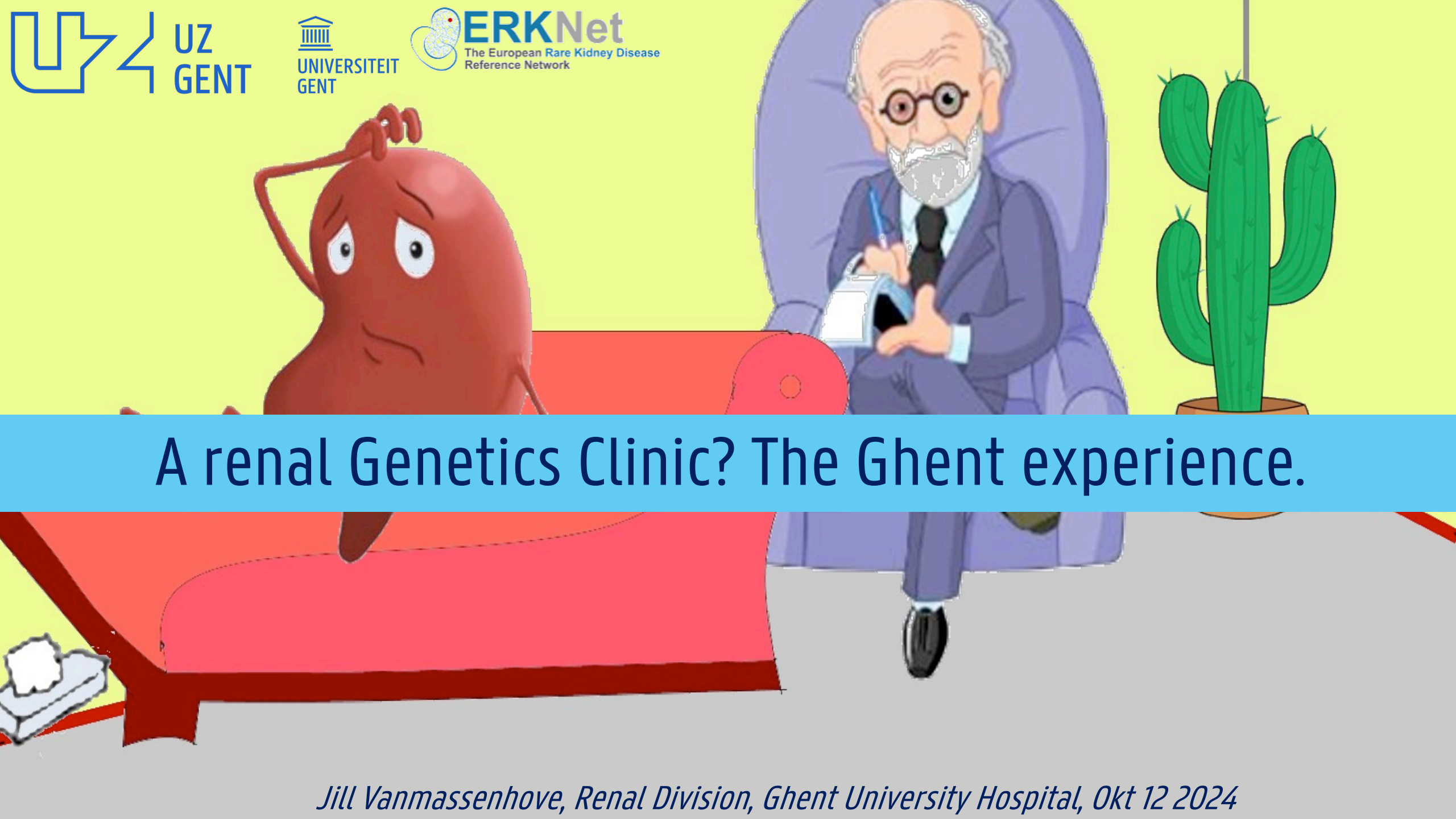




# A renal Genetics Clinic? The Ghent experience.

*Jill Vanmassenhove, Renal Division, Ghent University Hospital, Okt 12 2024*

# The Birth of the Renal Genetics Clinic

## JANUARY 2019

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|--------|--------|---------|-----------|----------|--------|----------|
|        |        | 1       | 2         | 3        | 4      | 5        |
| 6      | 7      | 8       | 9         | 10       | 11     | 12       |
| 13     | 14     | 15      | 16        | 17       | 18     | 19       |
| 20     | 21     | 22      | 23        | 24       | 25     | 26       |
| 27     | 28     | 29      | 30        | 31       |        |          |



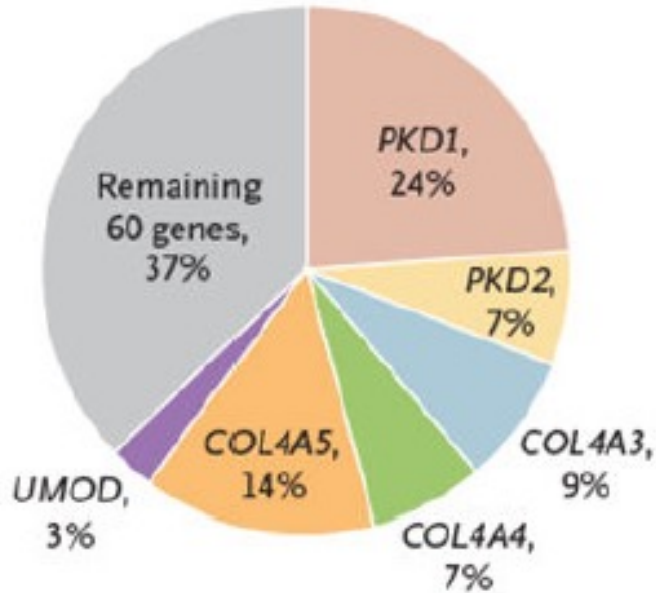
# Unmet Need!



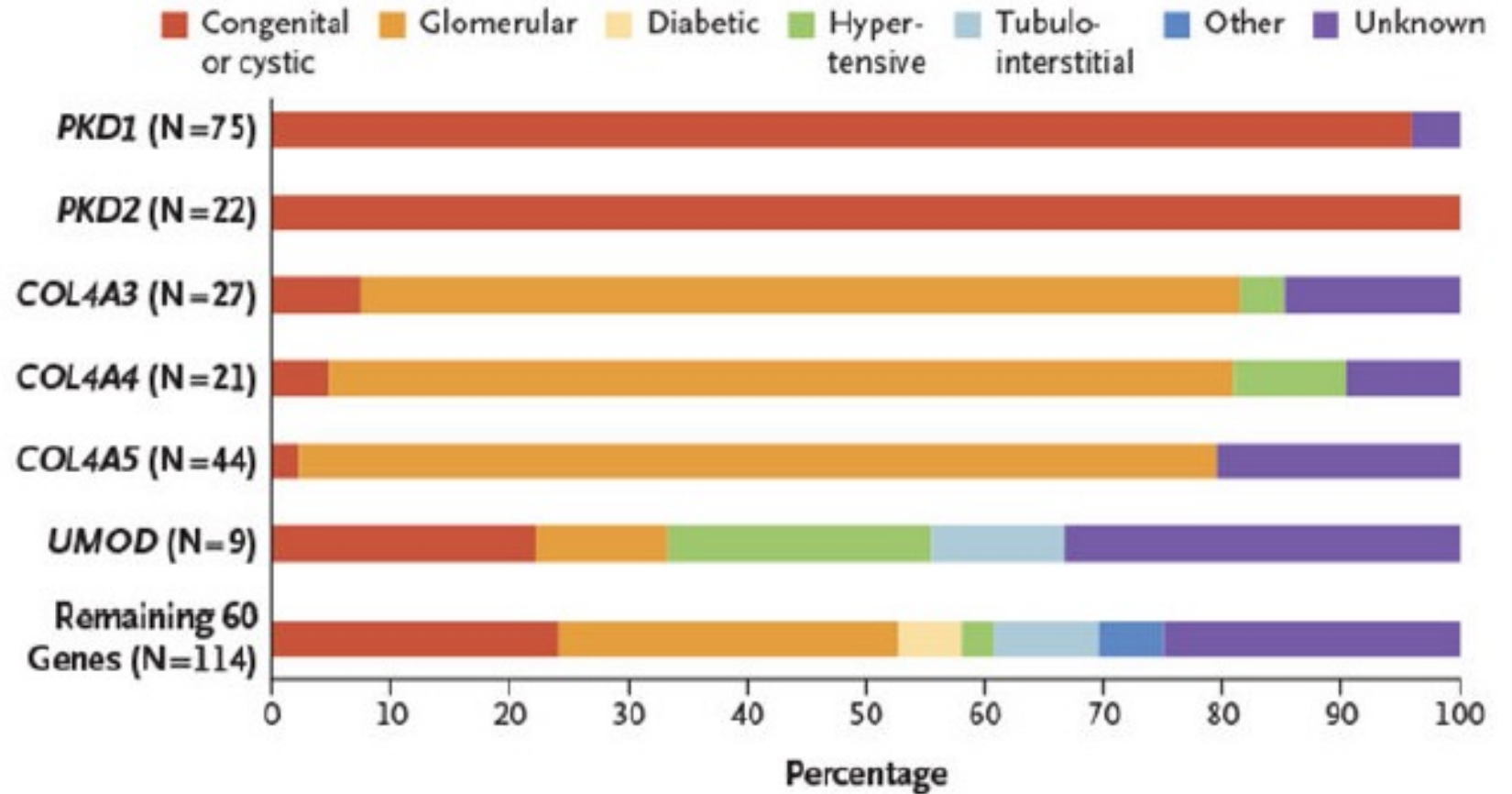
- Appropriate testing:** panel of genes (nephropathy panel), CNVseq/molecular karyotyping, WES, long read seq, RNA seq, mtDNA seq
- Informed consent**
- Counseling – VUS**
- Family Planning**
- Screening of at-risk family members** (symptomatic/asymptomatic)
- Psychological support**

# Genetic cause in 10% of patient with CKD of unknown origin

**A Common Genetic Findings**



**B Clinical Diagnostic Spectrum**

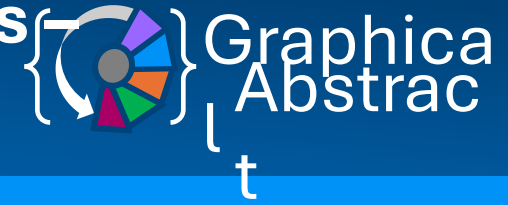


# Renal biopsy often not diagnostic



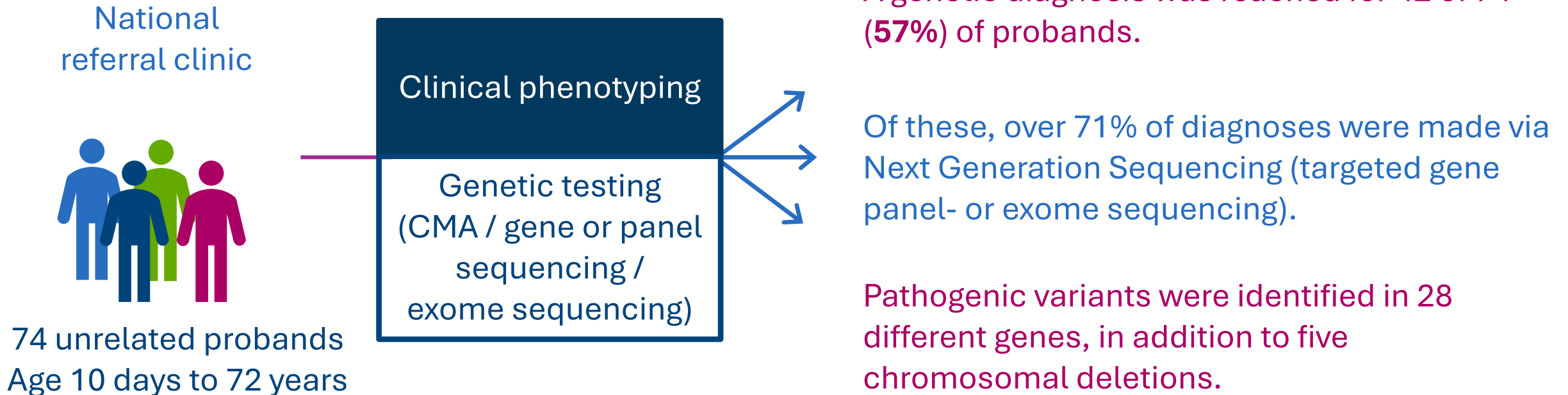
- Advanced stage kidney disease
- Histological pattern rather than diagnosis: FSGS lesions
- Pattern can change over time: MCD-FSGS spectrum
- miss rate
- interobserver variability

# A multidisciplinary nephrogenetic clinic for children and adults diagnostic achievements and insights



**HYPOTHESIS:** Genetic kidney diseases are an under-recognized contributor to kidney disease in children and adults

## DESIGN & OUTCOMES:



**CONCLUSION:** Nephrogenetics, a rapidly evolving field, may benefit from well-defined multidisciplinary co-management administered by a designated team including a nephrologist, medical geneticist and bioinformatician.

Pode-Shakked et al. 2021



**Pediatric Nephrology**

Journal of the  
International Pediatric Nephrology Association

# Attitudes and practices towards implementation of clinical genomics

## STUDY POPULATION



**135 Nephrologists and 37 Trainees** in Australia



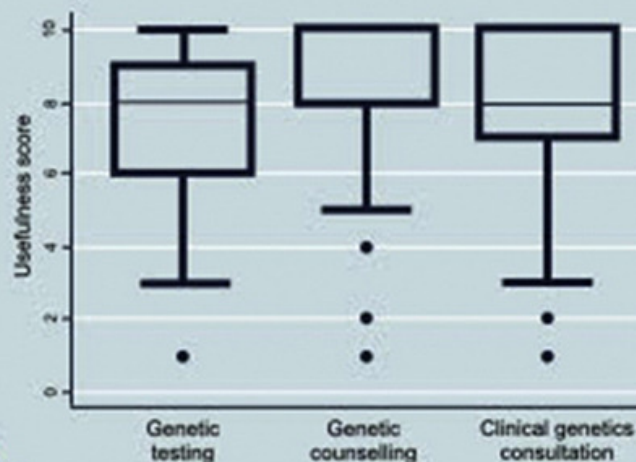
Surveyed on attitudes towards genomics



Consolidated Framework for Implementation Research (CFIR)

## FINDINGS

### Utility Scores of Genetic Testing



**Genetic Testing Useful**

**85%**

**Confident with Genomics**

**23%**

**Prefer multidisciplinary renal genetics clinic**

**57%**

**CONCLUSION:** Most nephrologists prefer a multidisciplinary renal genetics clinic model. Active implementation efforts will be required to promote a culture of genomic adoption in nephrology.

# Attitudes and practices towards implementation of clinical genomics

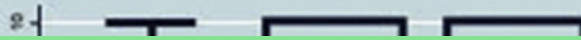
## STUDY POPULATION



135 Nephrologists  
and 37 Trainees  
in Australia

## FINDINGS

Utility Scores of Genetic Testing



Genetic Testing  
Useful

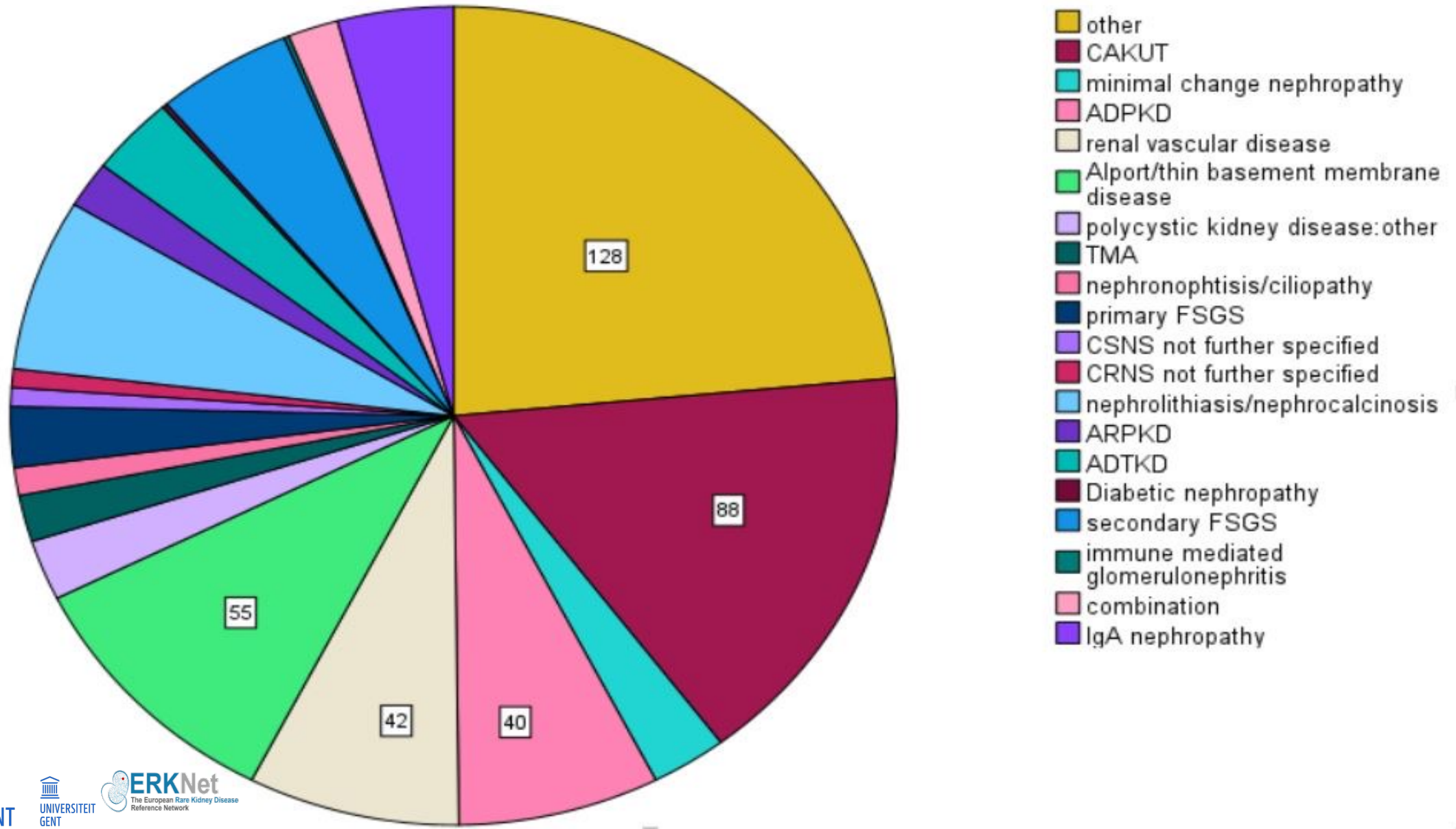
85%

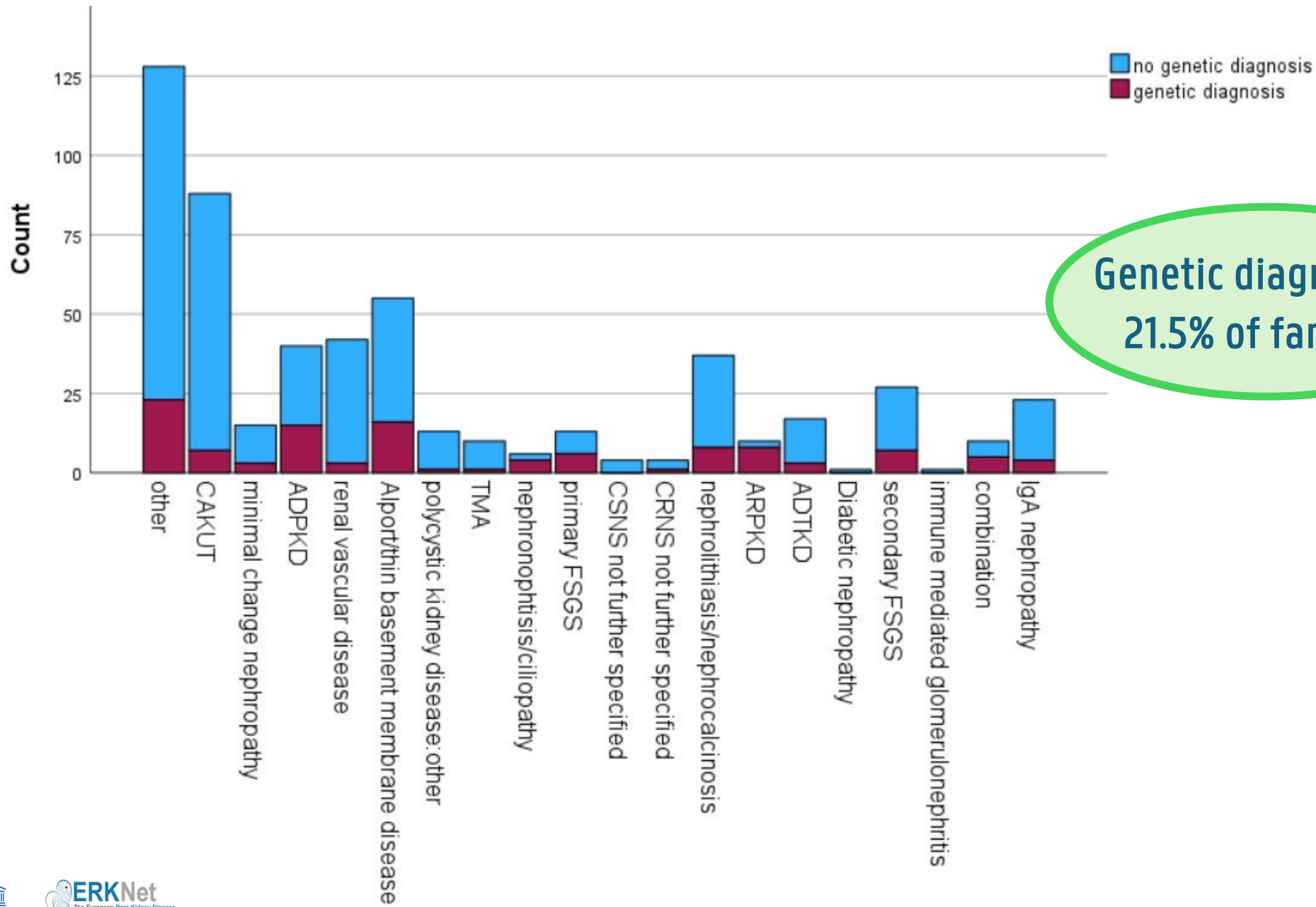
The development of guidelines for genomic testing will likely improve patient and test selection and the interpretation of results

Research (CRR)

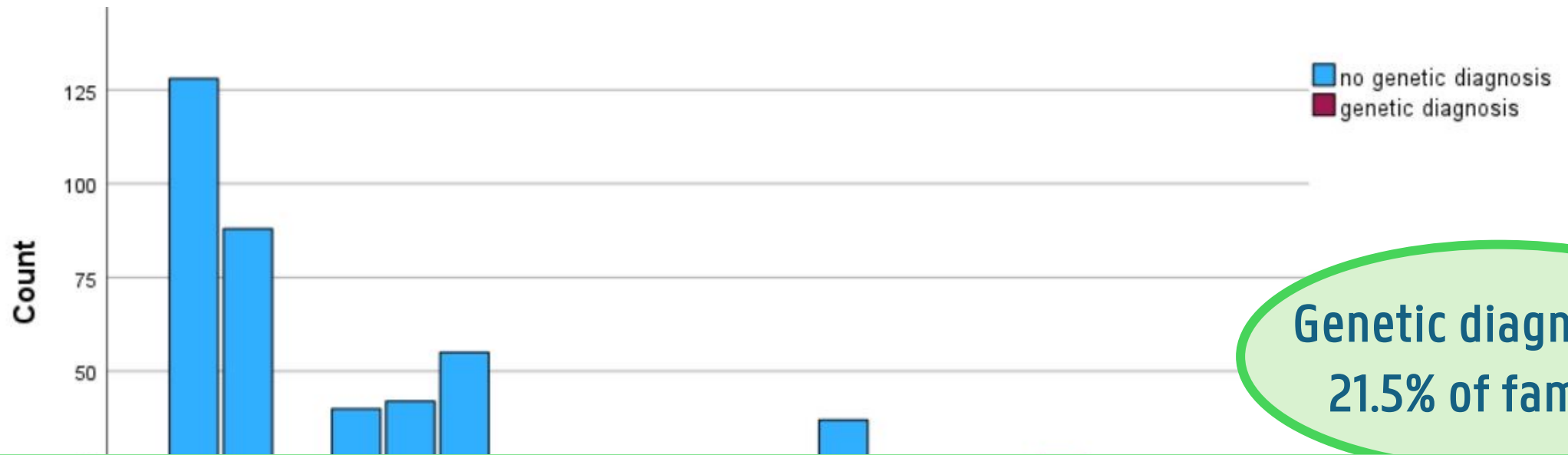
**CONCLUSION:** Most nephrologists prefer a multidisciplinary renal genetics clinic model. Active implementation efforts will be required to promote a culture of genomic adoption in nephrology.

# Diagnostic category before genetic analysis





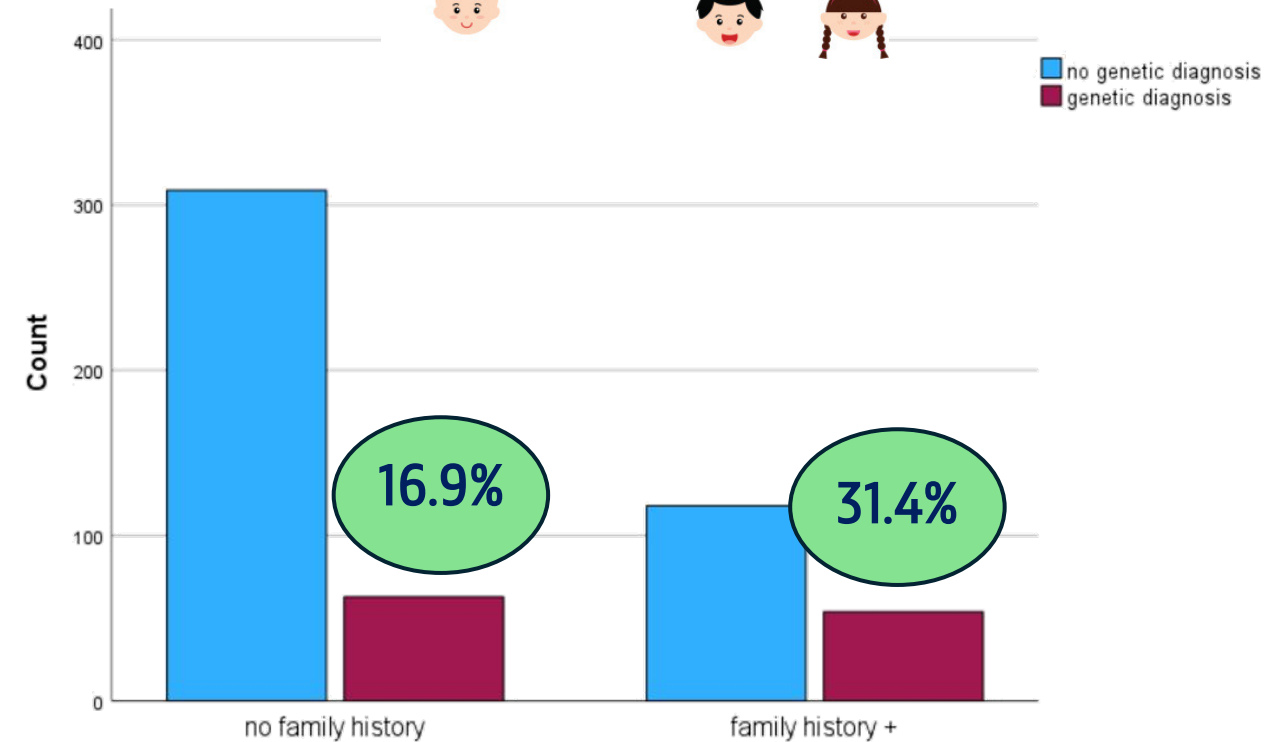
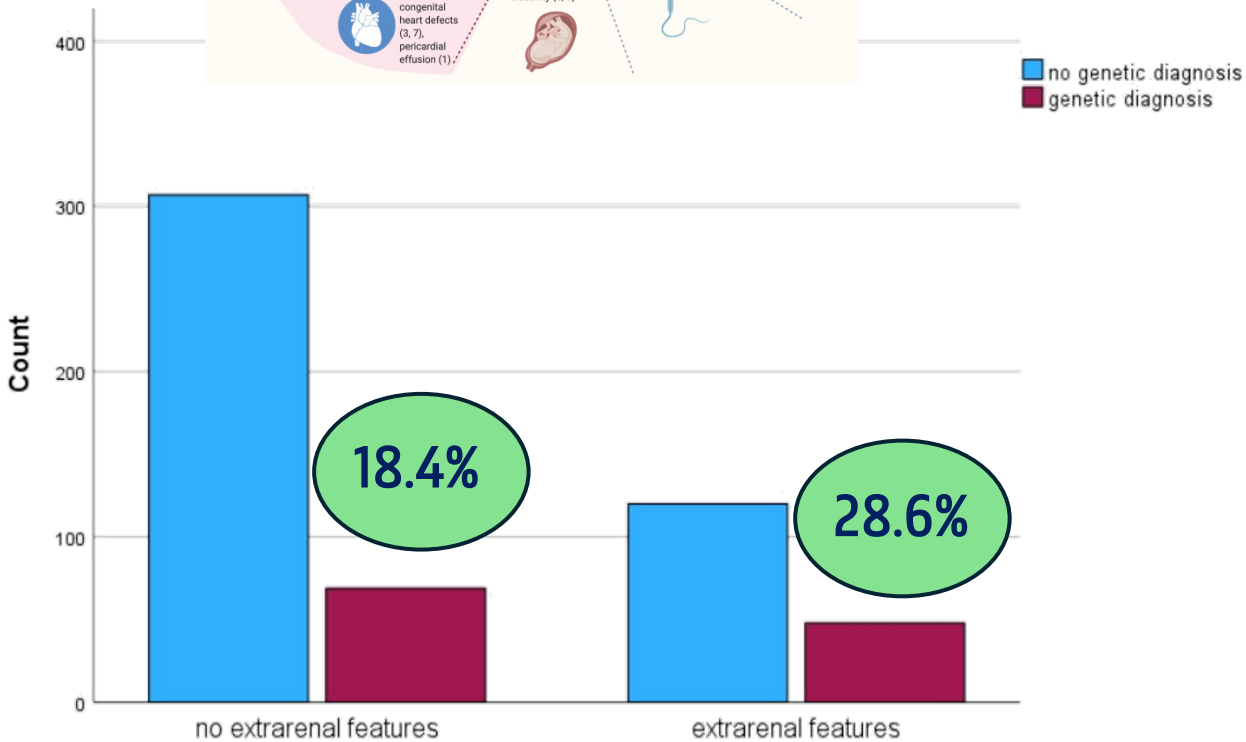
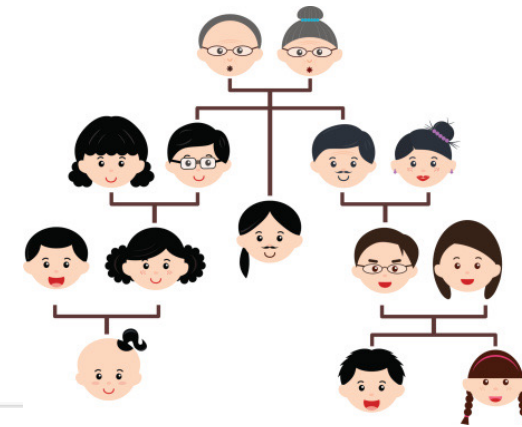
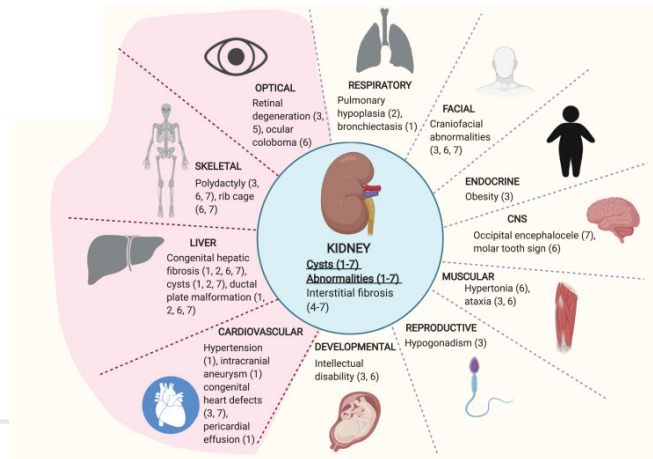
Genetic diagnosis in  
21.5% of families



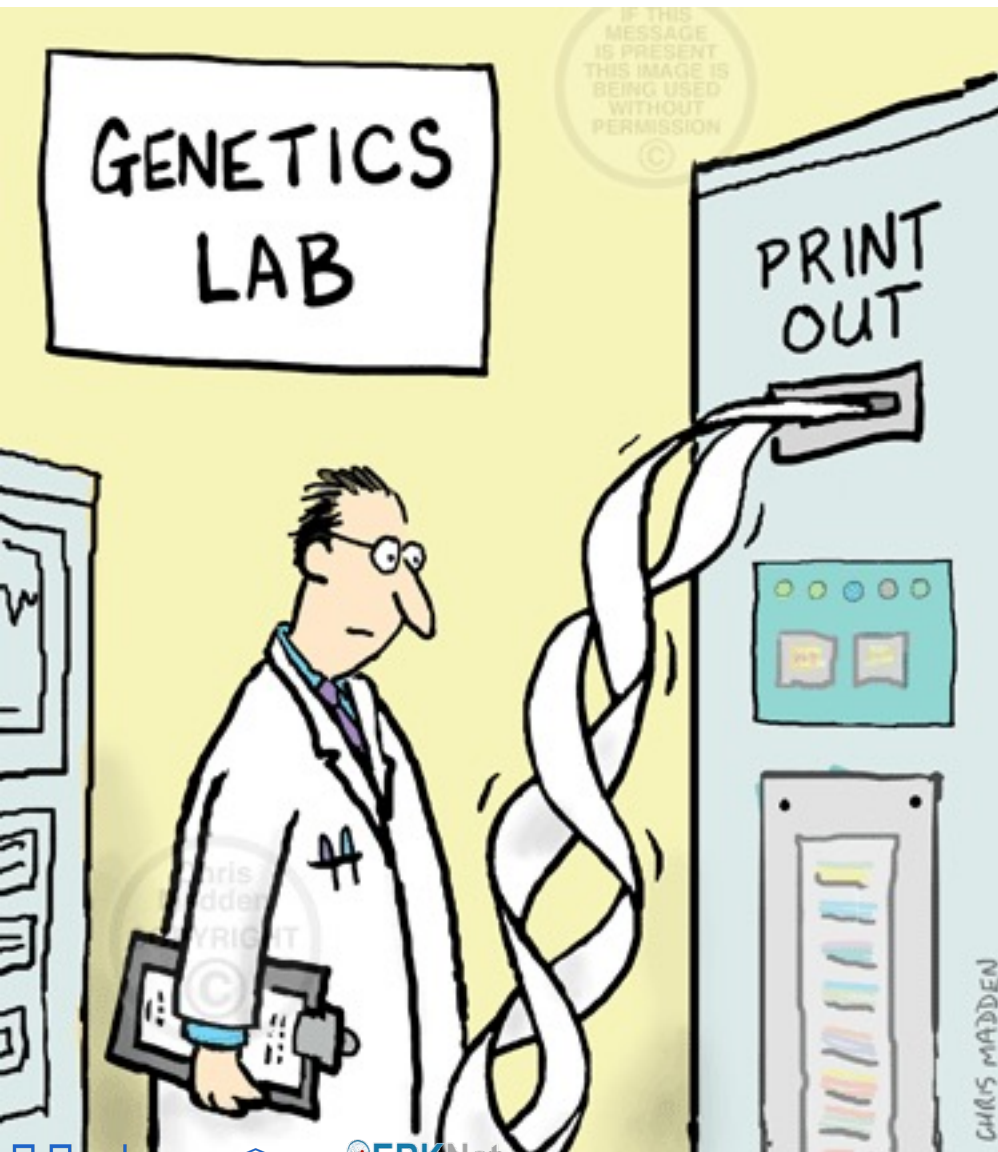
Genetic diagnosis in  
21.5% of families

**Highest yield in Cystic, Alport and FSGS phenotype**

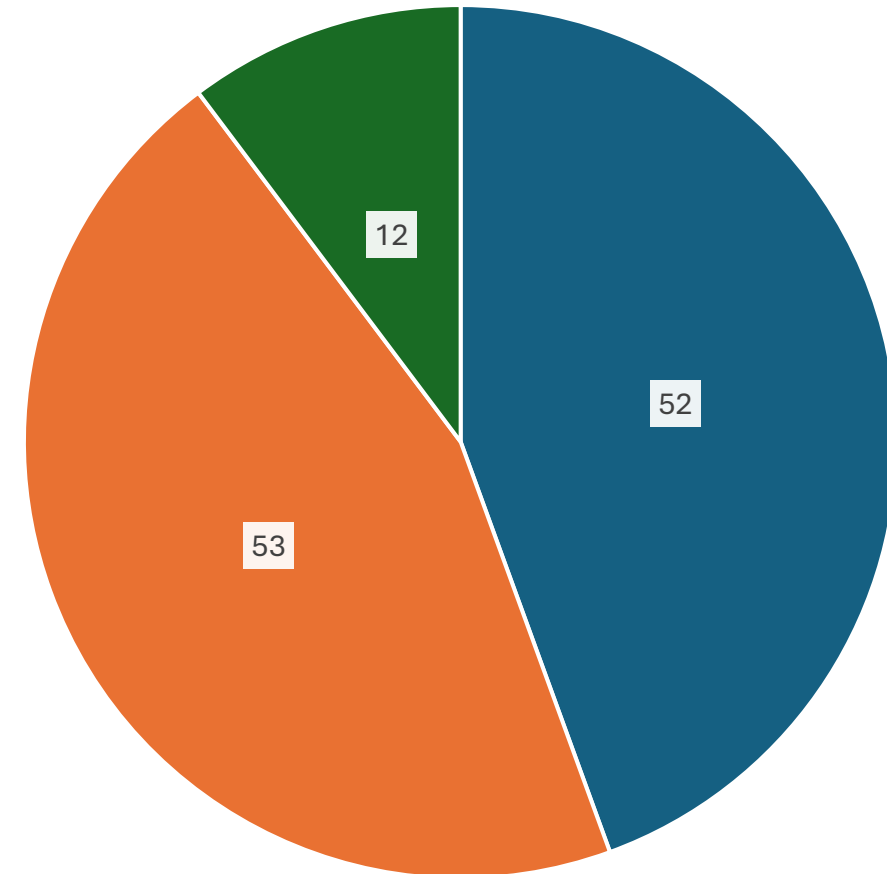
# Family history and extrarenal features



# Effect on diagnostic category



number of patients



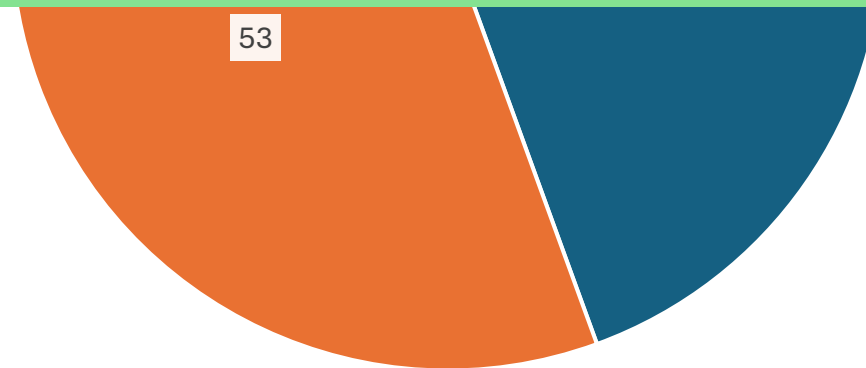
- change in diagnosis or de novo diagnosis
- confirmation of diagnosis
- added information to presumed diagnosis

# Effect on diagnostic category



Change in diagnosis or de novo diagnosis in 44% of patients

number of patients



- change in diagnosis or de novo diagnosis
- confirmation of diagnosis
- added information to presumed diagnosis



# Effect on diagnostic category

**Primary or  
secondary FSGS**

# Effect on diagnostic category

**Primary or  
secondary FSGS**

**Alagille**

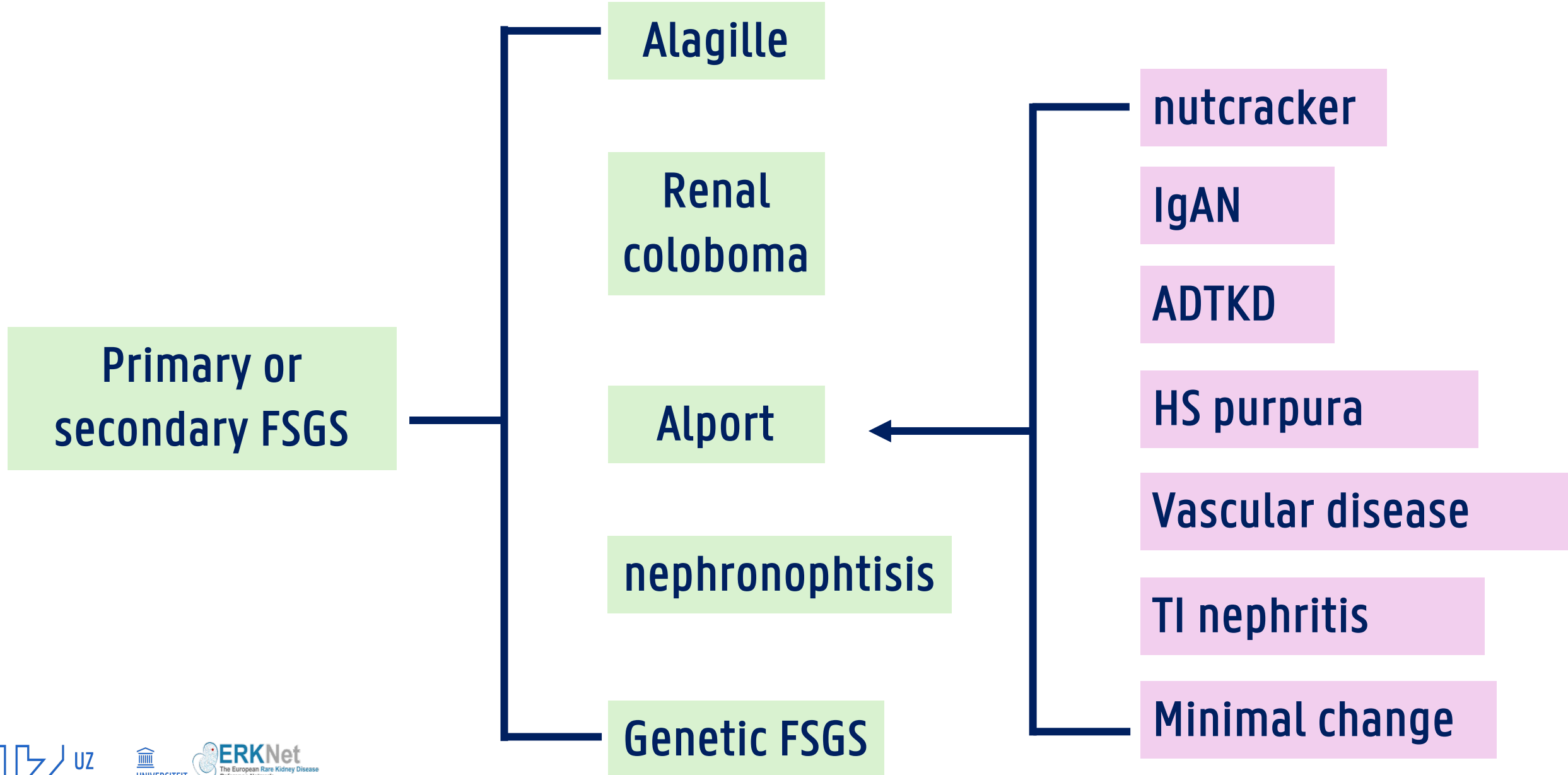
**Renal  
coloboma**

**Alport**

**nephronophthisis**

**Genetic FSGS**

# Effect on diagnostic category



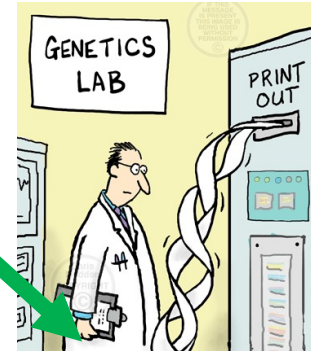
# Concordance renal biopsy-genetic analysis



132



32



28

No concordance



4

Concordance

# Concordance renal biopsy-genetic analysis



132

**FSGS on biopsy often results in a different diagnosis.  
FSGS is a lesion not a diagnosis.**

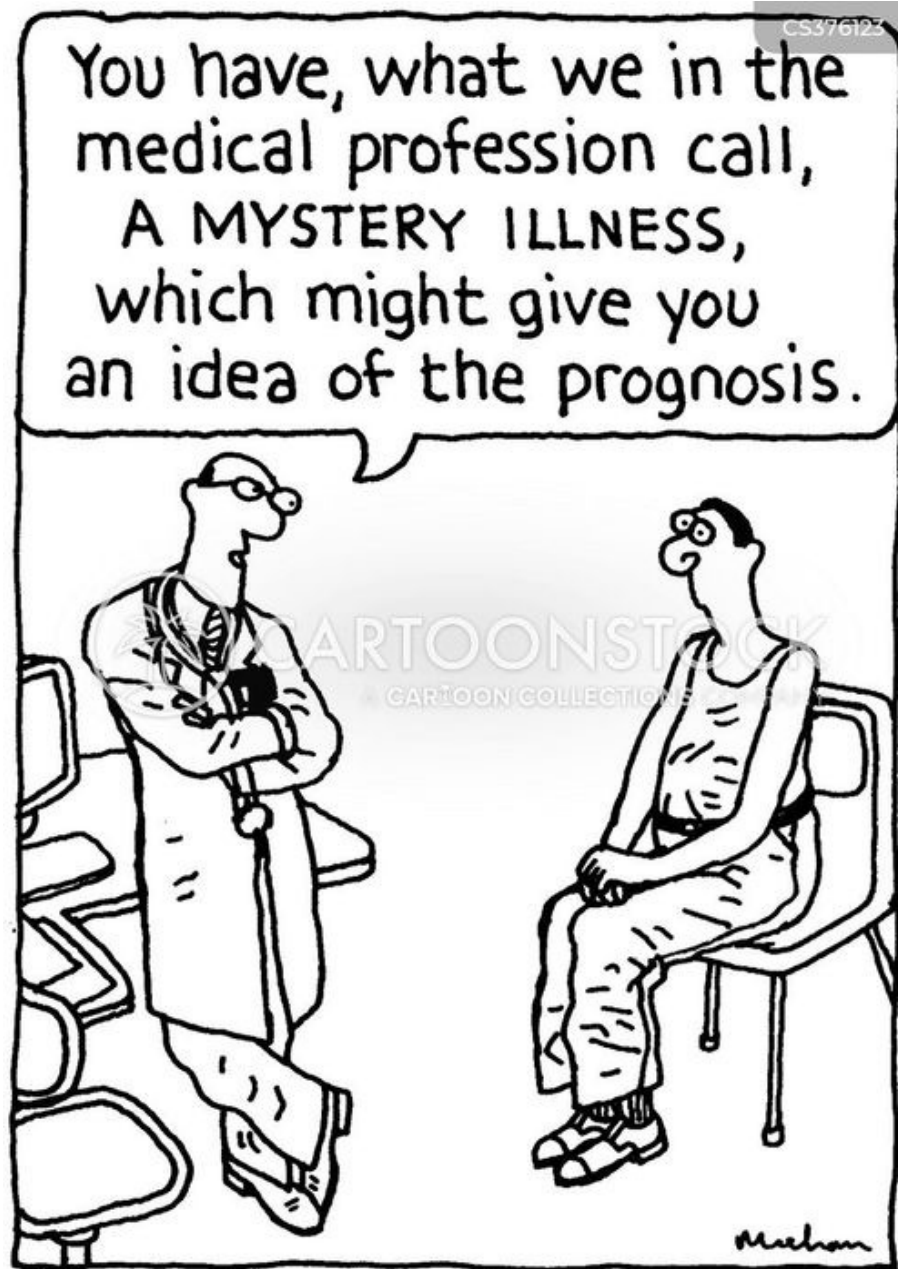
28

No concordance

4

Concordance

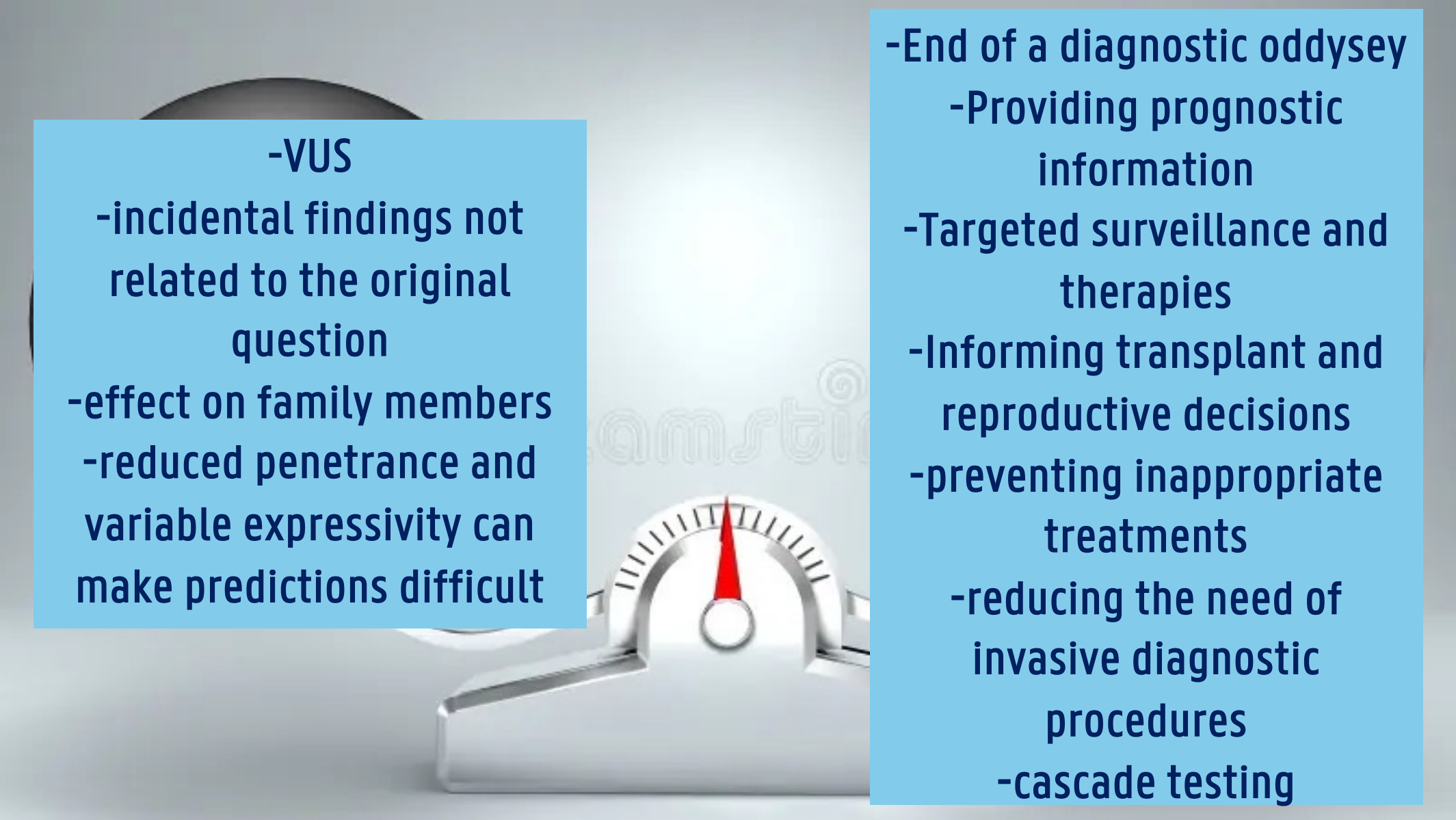








- End of a diagnostic odyssey
- Providing prognostic information
- Targeted surveillance and therapies
- Informing transplant and reproductive decisions
- preventing inappropriate treatments
- reducing the need of invasive diagnostic procedures
- cascade testing



### **-VUS**

- incidental findings not related to the original question**
- effect on family members**
- reduced penetrance and variable expressivity can make predictions difficult**

- End of a diagnostic odyssey**
- Providing prognostic information**
- Targeted surveillance and therapies**
- Informing transplant and reproductive decisions**
- preventing inappropriate treatments**
- reducing the need of invasive diagnostic procedures**
- cascade testing**

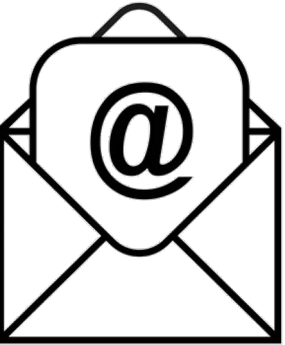


- Monogenic renal diseases are not that uncommon, even in adults.
- Yield is highest in selected populations with a positive family history and presence of extrarenal features.
- There is a need for multidisciplinary renal genetic clinics.
- The ideal team consists of lab supervisors, lab technicians, clinical geneticists, psychologists, pediatric and adult nephrologists, genetic counselors and pathologists.
- Guidelines could help.

# How can you reach us?



**093324509** (poli nefrologie), **093323603** (poli medische genetica): ask for an appointment at the renal genetics clinic)



Email secretariaat poli nefrologie: [Kathleen.Dauwe@uzgent.be](mailto:Kathleen.Dauwe@uzgent.be),  
[Dominique.Hutsebaut@uzgent.be](mailto:Dominique.Hutsebaut@uzgent.be), or [guler.ucar@uzgent.be](mailto:guler.ucar@uzgent.be)  
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[Tim.Vandamme@uzgent.be](mailto:Tim.Vandamme@uzgent.be)

