IDENTIFICATION AND DESCRIPTION OF GLOBAL REAL-WORLD DATA (RWD) SOURCES FOR IGA NEPHROPATHY (IGAN), MEMBRANOUS NEPHROPATHY (MN) AND C3 GLOMERULOPATHY (C3G)

Rajput T1, Agrawal R1, Rovira G2, Loefroth E2, Studer R2

1. Novartis Healthcare Pvt. Ltd., Hyderabad, India; 2. Novartis Pharma AG, Basel, Switzerland

PRESENTED AT:

Virtual ISPOR Europe 2020 | 16-19 November

BACKGROUND

- IgA nephropathy (IgAN), C3 glomerulopathy (C3G) and membranous nephropathy (MN) are complement mediated renal disorders, and C3G and MN are rare indications with an incidence rate of 1-3/1,000,000 and 8-10/1,000,000 respectively in US (1, 2).
- None of the indications are having an approved disease modifying therapy, however, rituximab is used off-label to treat MN, and eculizumab and mycophenolate have been recommended for C3G in certain cases (3, 4).
- Development of new therapies and increasing demands for justification of effectiveness generates the need for real world data (RWD).
- There is a wealth of global RWD relating to renal diseases; however, a comprehensive overview is missing. Further, the robustness of the sources of these indications and their suitability for use in observational research have not yet been assessed.

OBJECTIVE

- To identify RWD sources available for the rare renal diseases IgAN, MN and C3G globally in order to summarize and understand the availability of RWD in these rare diseases.
- The work aims to support the design and potentially selection of data sources for future collaborations and observational studies.

METHODOLOGY

- A literature review was conducted to identify RWD sources for IgAN, MN and C3G based on inclusion/exclusion criteria **Table 1**, using Medline and EMBASE from inception until May 20, 2019

Table 1: Inclusion/Exclusion criteria for screening the publications

Inclusion Criteria	Exclusion Criteria
Patient population • Adult patients with IgAN, MN, C3G	• Patients with any other disease than IgAN, MN, C3G • Non-human: Animal/In-vitro
Intervention/Comparator • Not limited based on interventions & comparators	• None
Outcome • Any	• None
Publication type (Study Design) • All real world studies (observational)	• RCTs and Interventional studies • Systematic reviews, meta-analysis • Case series/Case reports • Review/Editorial/Comments/Letters
Other • Language scope: English only	• Data source not specified

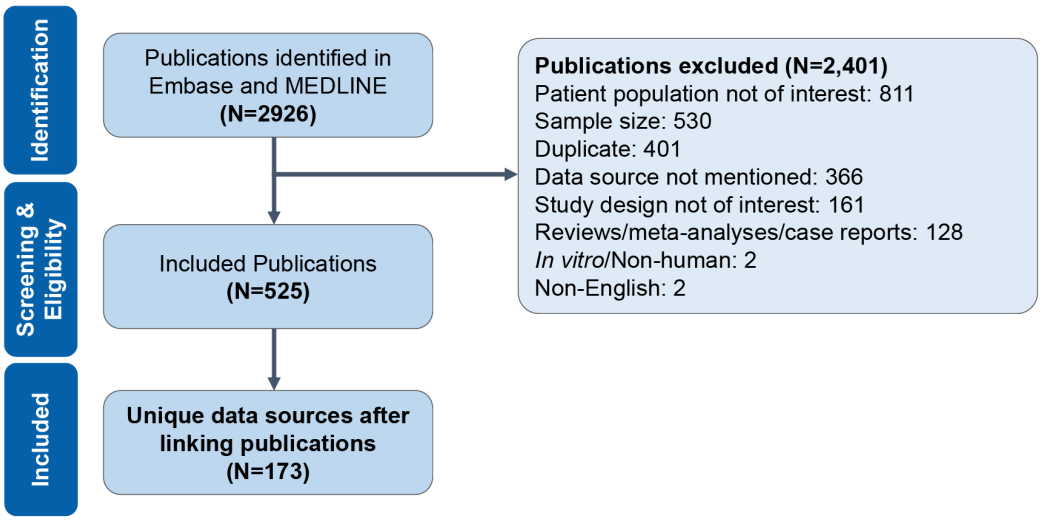
- Retrieved results were screened to devise a list of unique data sources and relevant meta-data (type of data source, study design, population size, epidemiology, demographics, clinical, economic and humanistic burden, follow-up duration, data access and linkage, etc.) was mapped.

- A metadata extraction tool was also developed to record the information contained in these unique data sources.

RESULTS

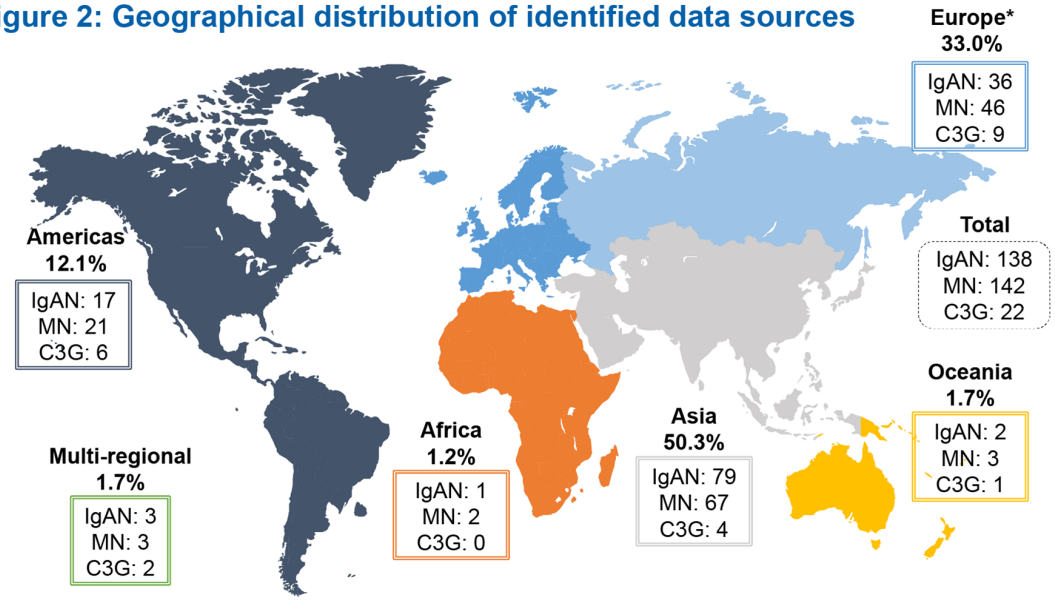
- A total of 2,926 publications were retrieved during the literature search, out of which 172 unique RWD sources and one additional data source obtained from desk research after the identification period of the literature review, were identified and mapped (IgAN only: 28; MN only: 32; C3G only: 3; IgAN & MN: 91; IgAN, MN & C3G: 19) **Figure 1**.

Figure 1: PRISMA flow diagram



- Overall, half of the data sources (50%) covered Asian countries, followed by Europe (33%) and Americas (12%) **Figure 2**.

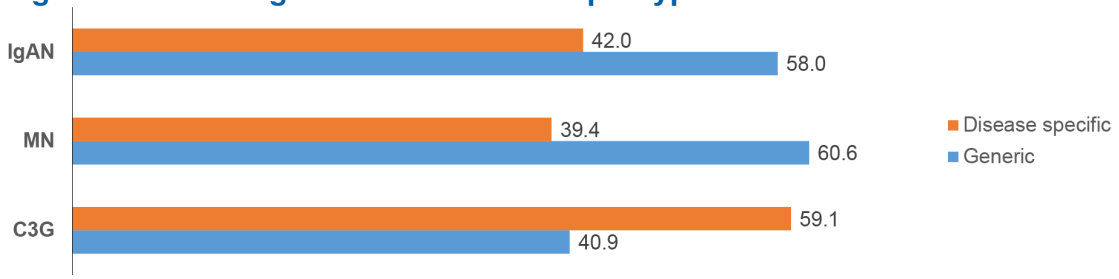
Figure 2: Geographical distribution of identified data sources



*Data sources from Russia have been counted under the category Europe due to population characteristics

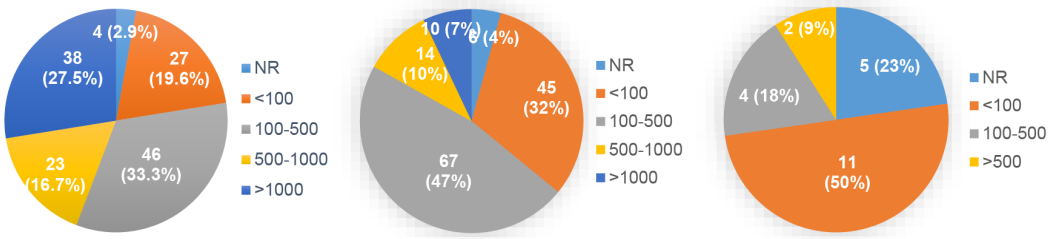
- Across IgAN, MN and C3G, there were 42%, 39% and 41% disease specific RWD sources, respectively (**Figure 3**).

Figure 3: Percentage of data sources as per type of data sources



- The sample size ranged from 50 to 20,000 patients for IgAN, 50 to 15,000 patients for MN and 50 to 1,500 patients for C3G. In IgAN, one third of the data sources (33.3%) included between 100 and 500 patients, and 27.5% of the data sources included more than 1000 patients. In MN, almost half of the data sources (47%) included between 100 and 500 patients and 32% less than 100 patients. In C3G, half of the data sources included less than 100 patients and 27% included more than 100 patients. (**Figure 4**).

Figure 4: Percentage distribution of data sources as per number of patients across indications



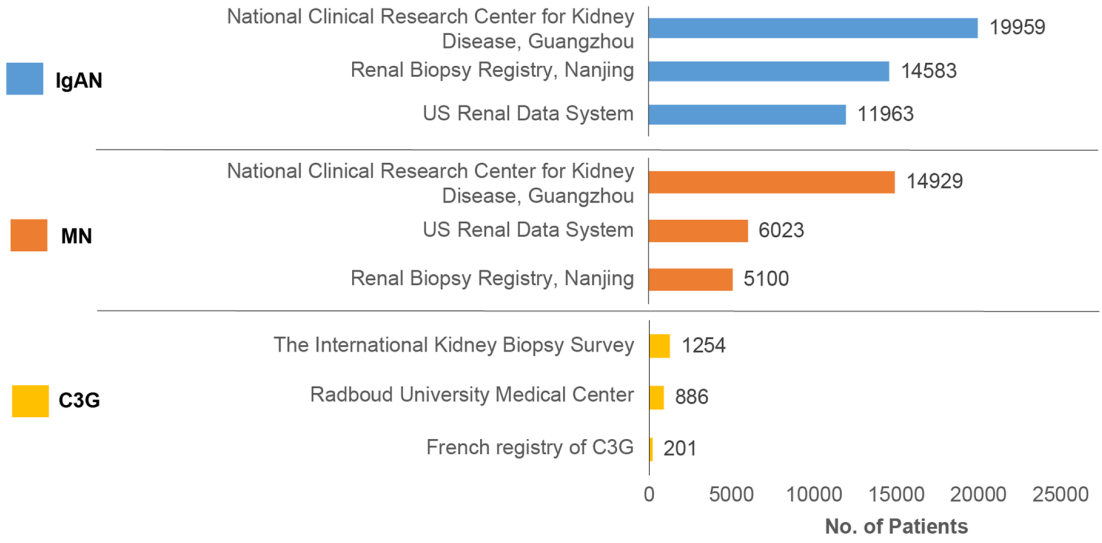
	IgAN,	**MN**,	**C3G**,
No. of Data sources	138	142	22

- Of the 173 identified data sources, National Clinical Research Center for Kidney Disease, Guangzhou reported highest number of patients for both IgAN (n=19,959) and MN (n=14,929); and the International Kidney Biopsy Survey reported highest number of patients for C3G (n=1,254) Figure 5.

- Data sources recorded minimum 5% and maximum 56% of the 68 assessed variables.

- The most commonly reported (>90% of data sources) variables were age, sex and biopsy as mode of diagnosis. Pain, quality of life and details of hospitalizations were the least reported (<1%) ones; fatigue, mental/emotional health, caregiver burden and re-hospitalizations were not at all reported across all the three indications. Patients' baseline eGFR and proteinuria levels were captured in >60% and >80% data sources, respectively **Figure 6**.

Figure 5: Data sources reporting highest number of patients as per the indications



- Possibility of collaboration or access to the data was actively reported in 21% of data sources.

CONCLUSION

- **This comprehensive overview identified global RWD sources for IgAN and MN in certain geographies, with limited availability of existing RWD for C3G.**
- **It also highlighted the fact that there are substantial geographical and data gaps for many variables, especially patients' perspective and economic burden of the diseases, which in turn generates the need for robust disease specific RWD sources.**
- **Nevertheless, the overview might provide the base for identification of opportunities for future partnerships and more efficient and sustainable use of RWD.**

REFERENCES

1. Keri KC, Blumenthal S, Kulkarni V, Beck L, Chongkrairatanakul T. Primary membranous nephropathy: comprehensive review and historical perspective. Postgraduate Medical Journal. 2019;95(1119):23-31.
2. Smith RJ, Appel GB, Blom AM, Cook HT, D D'Agati V, Fakhouri F, et al. C3 glomerulopathy—understanding a rare complement-driven renal disease. Nature Reviews Nephrology. 2019;15(3):129-43.
3. Goodship TH, Cook HT, Fakhouri F, Fervenza FC, Frémeaux-Bacchi V, Kavanagh D, et al. Atypical hemolytic uremic syndrome and C3 glomerulopathy: conclusions from a "Kidney Disease: Improving Global Outcomes"(KDIGO) Controversies Conference. Kidney international. 2017;91(3):539-51.
4. Couser WG. Primary membranous nephropathy. Clinical Journal of the American Society of Nephrology. 2017;12(6):983-97.

Conflict of interest

Tanvi Rajput, Rumjhum Agrawal, Gisela Rovira, Emil Loefroth and Rachel Studer are employees of Novartis.

Acknowledgement

The authors acknowledge Vinod Goshamahal (Novartis, Hyderabad) for designing the poster layout. The final responsibility for the content lies with the authors.

Funding

This study was funded by Novartis Pharma AG.