Real-Time Technology Adoption: Assessing Early Real-World Trends in Renal Denervation Therapy Following Initial Device Approval

J. McGonigle[1], M. Castro[2], M. Sweeny[3], F. Hurst[4], M. Edwards[1], C. Mack[4]

[1]IQVIA, Minneapolis, MN, USA, [2]IQVIA, Vancouver, BC, Canada, [3]IQVIA, Toronto, ON, Canada, [4]IQVIA, Durham, NC, USA; joe.mcgonigle@iqvia.com

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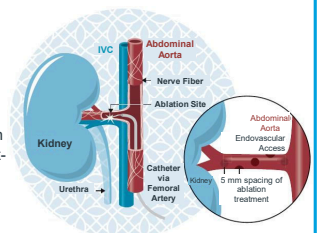
Background and Aim

Background

Approximately 120 million US adults have hypertension with an estimated 95 million taking medication and annual associated costs >$200 billion.[1] Despite medication, an estimated 10 million adults in the US live with treatment-resistant hypertension.[2] Renal Denervation (RDN) is a new technology that could address the unmet needs in this population.



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Objective

This US-based RWE study aims to characterize early trends in RDN including a) Rate of adoption b) Characteristics of treated patients and providers and c) Impacts on antihypertensive medication utilization

Methods

We analyzed patient claims using open-source longitudinal medical and prescription claims datasets from April 2022 to February 2025

Procedure Codes Used:

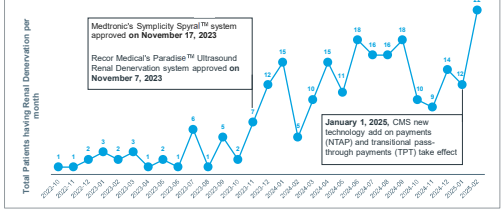
0338T (Transcatheter RDN; Unilateral)
0339T (Transcatheter RDN; Bilateral)
X051329 (RDN using ultrasound ablation)
X05133A (RDN using radiofrequency ablation)

RDN procedures characteristics were analyzed and compared to hypertension. Efficacy was assessed by comparing prescriptions for 180 days pre and post the RDN procedure

In total, data on 253 patients treated by 110 unique providers was included. Data on procedure modality was limited (n = 16) but showed ultrasound ablation as the primary approach

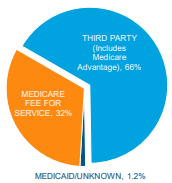
Results

Renal Denervation procedures have increased since approval; Reimbursement changes in 2025 may accelerate adoption



Patient and Payer Data for RDN

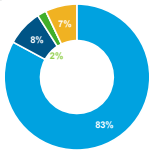
	RDN Patients	Overall Hypertension Diagnosed Patients
Time Frame	Jan 2021 to Feb 2025	Nov 2024 to Feb 2025
N value	253	26,891,441
Gender	52% Male 48% Female	47% Male 53% Female
Average Age	63.0	65.5



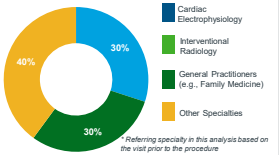
RDN patients were **younger and more likely to be male** than hypertension population

2/3 of included patients had **third party commercial payers** and 1/3 were on Medicare

Rendering Providers for RDN

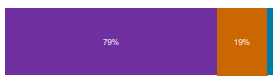


Referring Specialty for RDN*



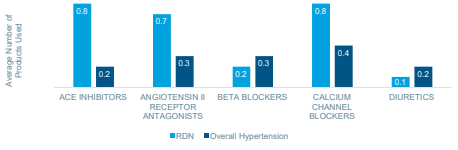
*Referring specialty in this analysis based on the visit prior to the procedure

Site of Service for RDN



89 facilities were identified performing RDN. The highest volumes were seen in large, academic medical centers including Mt. Sinai, The Cleveland Clinic and Stanford

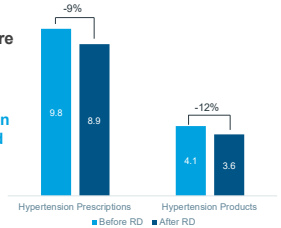
RDN patients have ~2x the amount of medication burden compared to overall hypertension patients



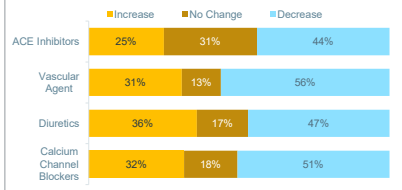
RDN patients used more of most common classes of hypertension medications including **ACE inhibitors, Angiotensin II Receptor Antagonists** and **Calcium Channel Blockers**

Medication Utilization Before and After RDN

Over a six-month period following RDN, **prescription usage decreased by 9%,** and **product usage decreased by 12%**



Medication Utilization Change by Drug Class



Calcium Channel Blockers usage **decreased in 51%** of patients, notable since over 70% usage, including Amlodipine Besylate and Nifedipine

Usage of Diuretics and ACE Inhibitors also declined, with **47% and 44%** of patients **reducing intake**

Significant **decreases** were seen in **Vascular Agents** (e.g., Hydralazine HCl) and **Direct Renin Inhibitors** (e.g., Aliskiren), although these were used by only 41% and 4% of patients, respectively

Data Source

Medical Claims

IQVIA's open-sourced claims include unadjudicated institutional and professional medical claims data covering approximately 191 million patients with history from 2006

Data Elements

- Hypertension diagnosis
- Patient demographics
- Renal denervation procedures

IQVIA's Prescription claims are linkable to IQVIA's medical claims through a de-identified patient identifier.

Prescription Claims

IQVIA receives nearly **4 billion prescription claims per year,** with history from January 2006 and coverage for more than 90% of retail channel, 60–85% of mail service, and 75– 80% of long-term care

Data Elements

- Type of antihypertensive medication
- Number of prescriptions

Limitations

- While open claims data is **not a complete view of all procedures** and is missing parts of Medicare and other payer types **it is representative of the treatment landscape**
- Claims data **doesn't include quantitative blood pressure readings** to assess hypertension control
- Prescription data doesn't encompass **patient compliance**

Discussion

- We **anticipate adoption to accelerate in 2025** with the improving reimbursement environment due to **CMS initiating NTAP and TPT** programs[3]
- **Future studies** should look to link procedural and prescription data to **blood pressure readings**, evaluate **longer term** and **economic outcomes**, monitor **safety**, and identify **optimal responders**

Conclusion

- Adoption of RDN has **increased rapidly since approval** in late 2023 but **overall penetration of the therapy remains low**
- The procedure is being done almost exclusively by **cardiologists at large academic medical centers** in patients with **above average utilization of hypertension medications**
- Data indicates an **~10% decrease in antihypertensive drug utilization** after the procedure
- The most **impactful reduction** in hypertension medication usage is for **calcium channel blockers** and **vascular agents (vasodilators)**

References

1. Health and Economic Benefits of High Blood Pressure Interventions. https://www.cdc.gov/nccdphp/priorities/high-blood-pressure.html. December 9, 2024.
2. Carey RM, Sakhuja S, Calhoun DA, Whelton PK, Muntner P. Prevalence of Apparent Treatment-Resistant Hypertension in the United States. Hypertension. 2019;73(2):424-431.
3. Neale T. Reimbursement Issues Seem to Be Holding Renal Denervation Back. TCT MD. December 19, 2024.