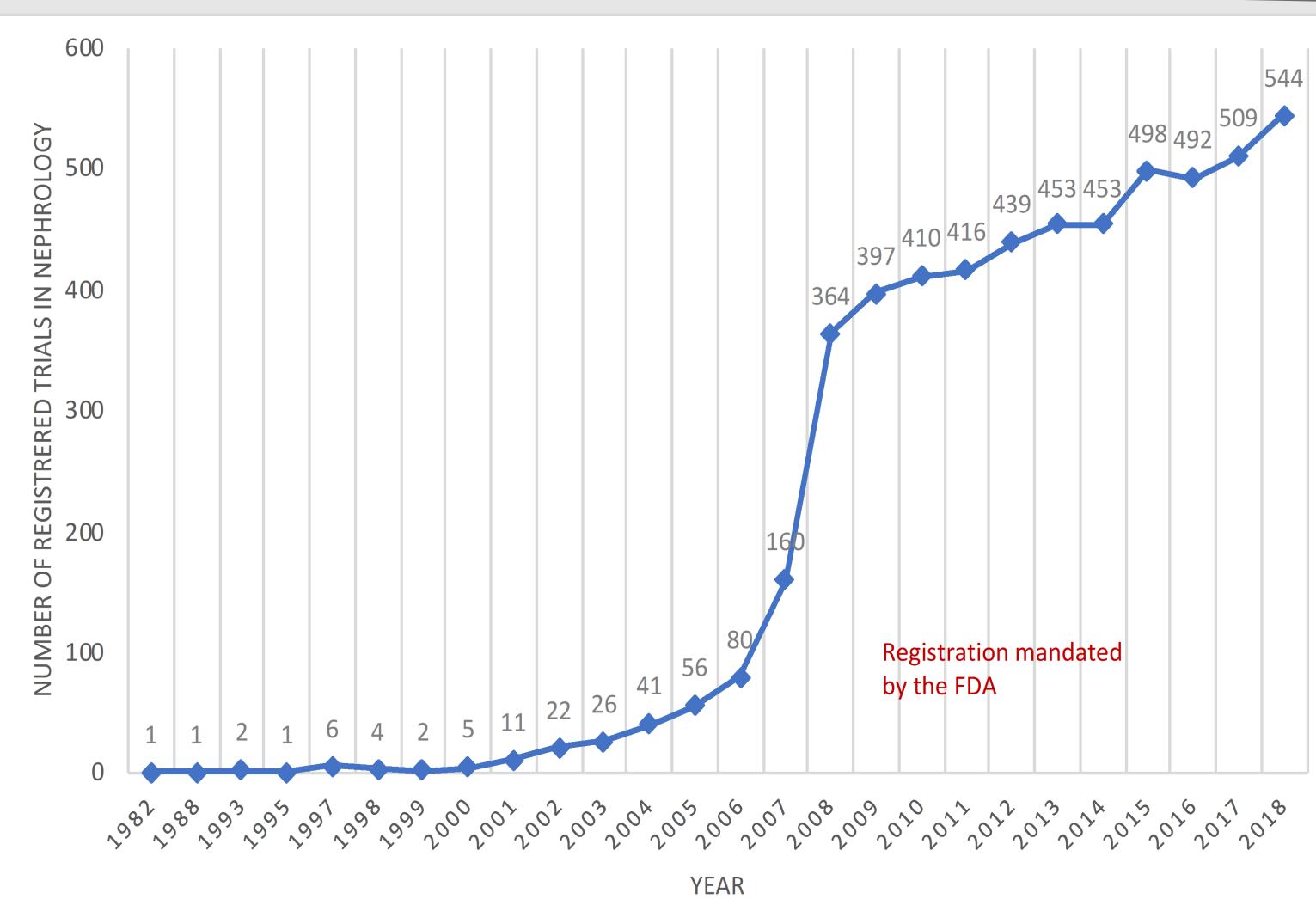


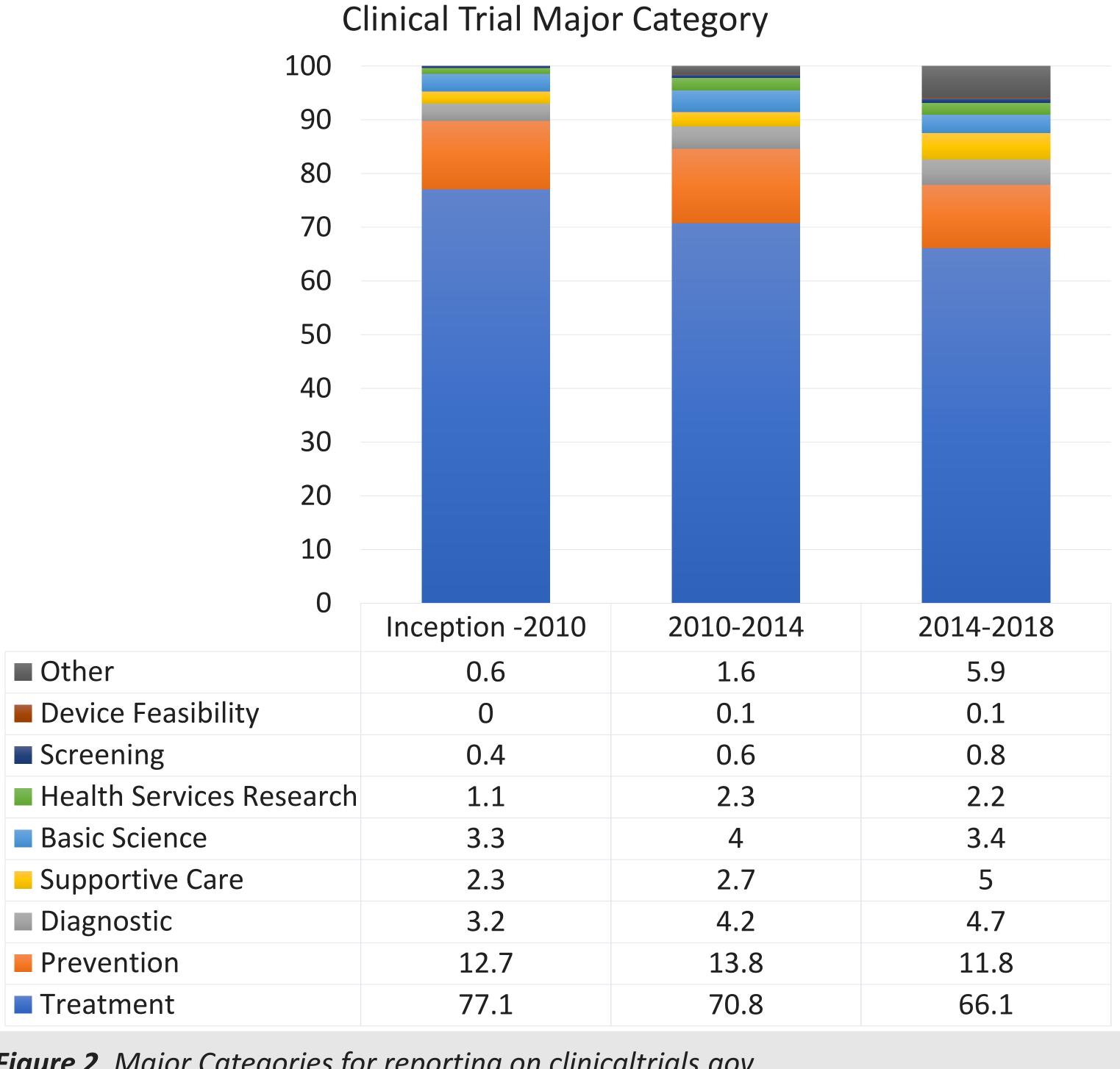
Introduction

- Previously published reviews highlighted low rates and poor quality of clinical trials in nephrology compared to other specialties.
- In this review we assess time trends in quality and quantity of nephrology trials.

Methodology

- We conducted a systematic review among Nephrology trials registered on ClinicalTrials.gov from inception to November 2018.
- Two independent reviewers assessed every trial and extracted data about major category, population and outcomes.
- After downloading a database of 288,515 interventional registered trials, the Nephrology data set was restricted to studies that includes one of 154 nephrology terms (both Medical Subject Headings [MeSH] and non-MeSH).
- Reviewers screened 5412 records and included 4959 studies in data analysis. We grouped the included trials into 3 eras. Era-1 [09/30-1982-08/31/2010]; Era-2 [09/01/2010-08/31/2014]; Era-3 [09/01/2014-12/31/2018].





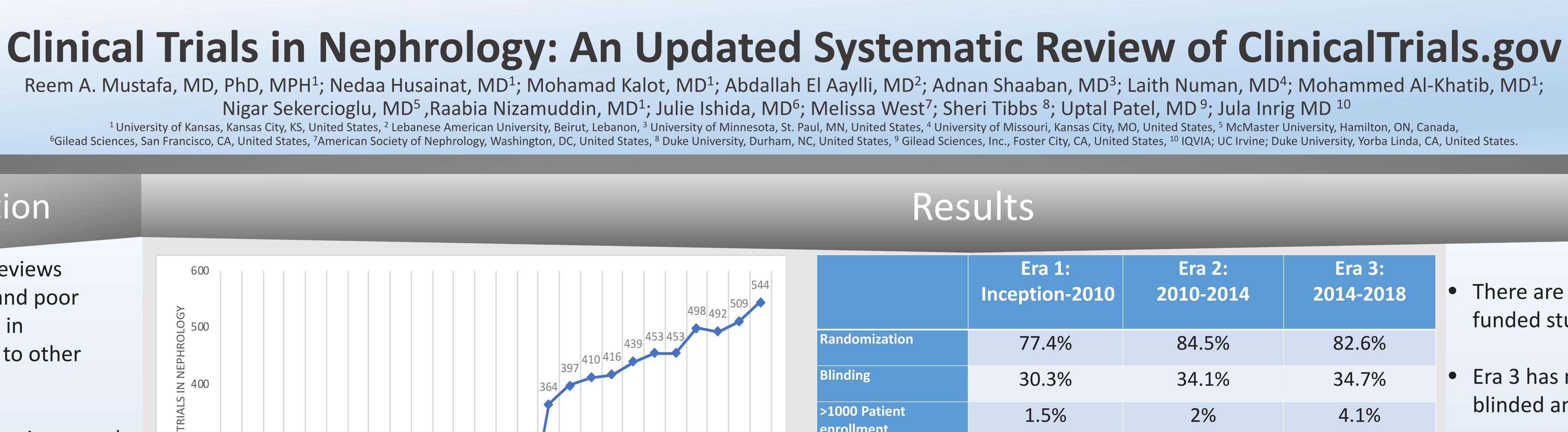


Figure 2. Major Categories for reporting on clinicaltrials.gov

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Results

| | Era 1: Inception-2010 | Era 2: 2010-2014 | |
|-----------------------------|--------------------------|---------------------|--|
| Randomization | 77.4% | 84.5% | |
| Blinding | 30.3% | 34.1% | |
| >1000 Patient enrollment | 1.5% | 2% | |
| NIH funded | 8% | 4.5% | |
| Industry Funded | 45.3% | 42.8% | |
| Drug Intervention | 73.5% | 64.5% | |
| Device Intervention | 6% | 8.9% | |
| Behavioral Intervention | 2.7% | 4% | |
| Glomerular disease | 5.8% | 6% | |

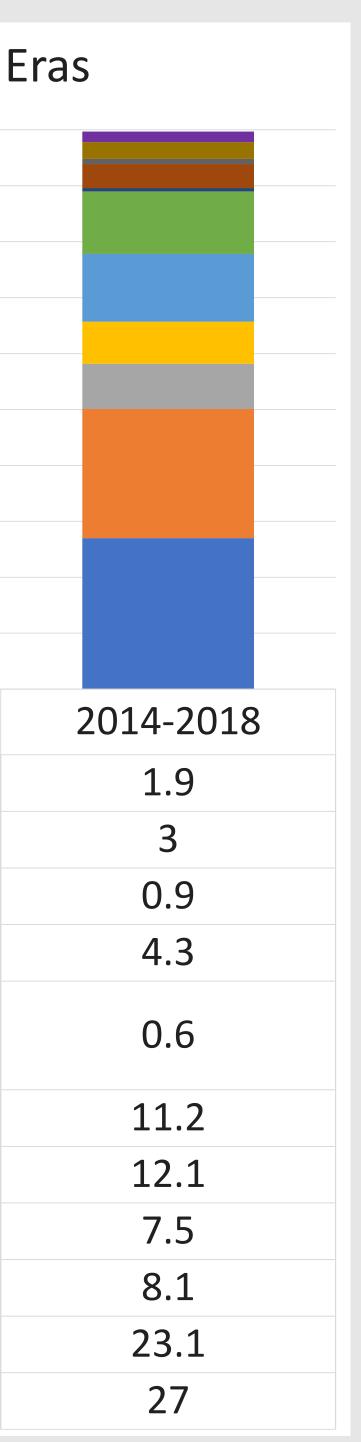
 Table 1.
 Trial Characteristics

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| Glomerular Disease5.86Renal Transplantation12.711.6End Stage Renal Disease21.121.9 | Acute Kidney Injury | 9.7 | 10.6 |
| Renal Transplantation12.711.6End Stage Renal Disease21.121.9 | Neoplastic Disorders | 15 | 12 |
| End Stage Renal Disease 21.1 21.9 | Glomerular Disease | 5.8 | 6 |
| | Renal Transplantation | 12.7 | 11.6 |
| Chronic Kidney Disease 25.7 27.8 | End Stage Renal Disease | 21.1 | 21.9 |
| | Chronic Kidney Disease | 25.7 | 27.8 |

Figure 3. Distribution of nephrology trials.; While there is a decrease in transplant trials, there is an increase in living donor recipient trials [Era 1: 11.4; Era 2: 8.6; Era 3: 23.4%]



| Era 3: 2014-2018 |
|---------------------|
| 82.6% |
| 34.7% |
| 4.1% |
| 6.6% |
| 32.2% |
| 57.2% |
| 10.7% |
| 6.2% |
| 7.5% |



- There are less NIH and industry funded studies.
- Era 3 has more randomized, blinded and large trials.
- Drug trials per era has decreased while device and behavioral interventions increased.

Discussion

- There has been an increase in the number of nephrology trials conducted over time.
- There has been some improvement in quality and a promising trend in trials for devices, behavioral interventions
- Initiatives like the Kidney Health Initiative (KHI) are likely to have contributed to the improvement in quality and quantity of nephrology trials.
- Highlighting specific areas that are deficient in nephrology trials is likely to have increased contribution in those areas.

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Figure 1. Number of registered nephrology trials on ClinicalTrials.gov