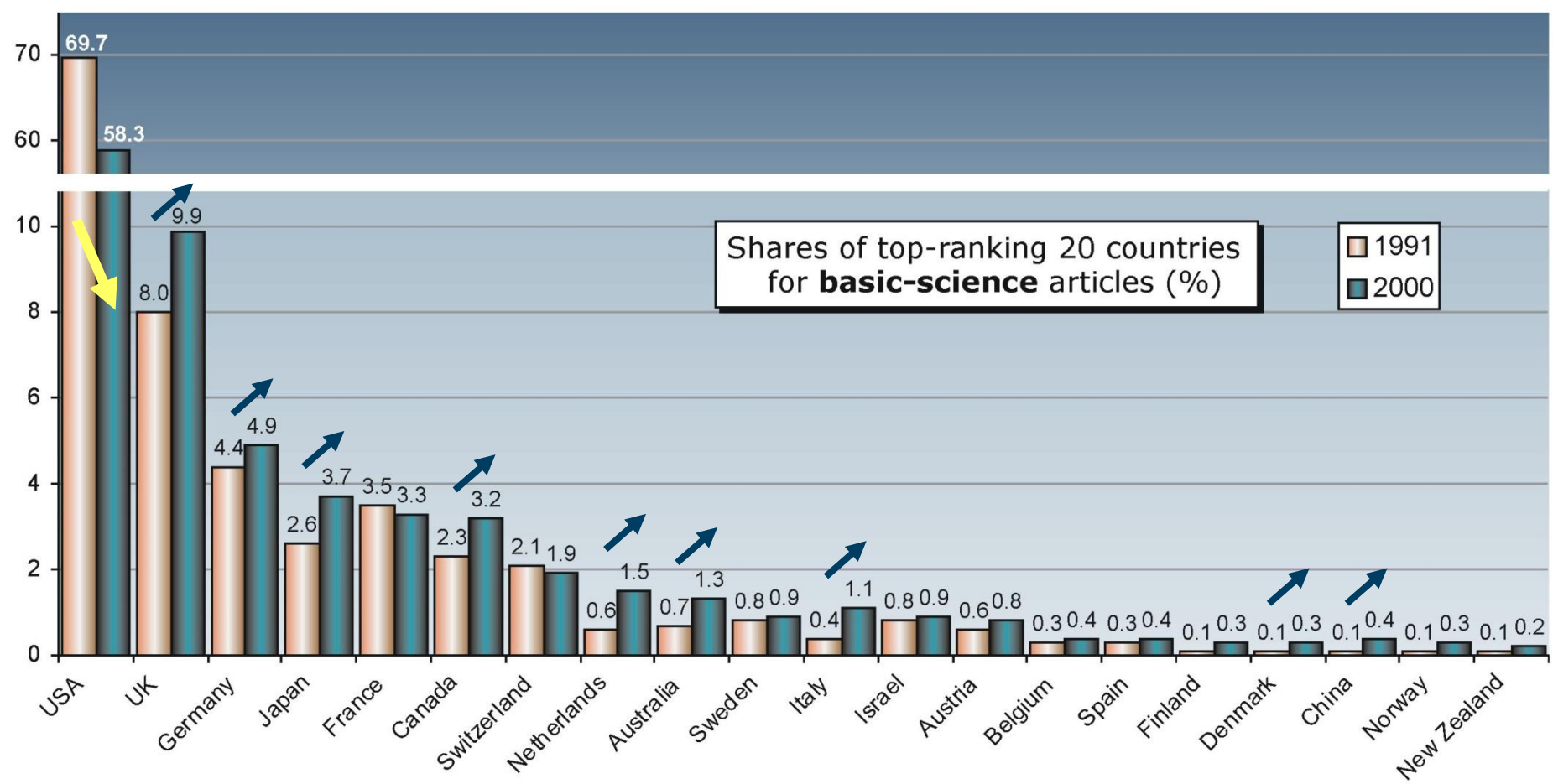
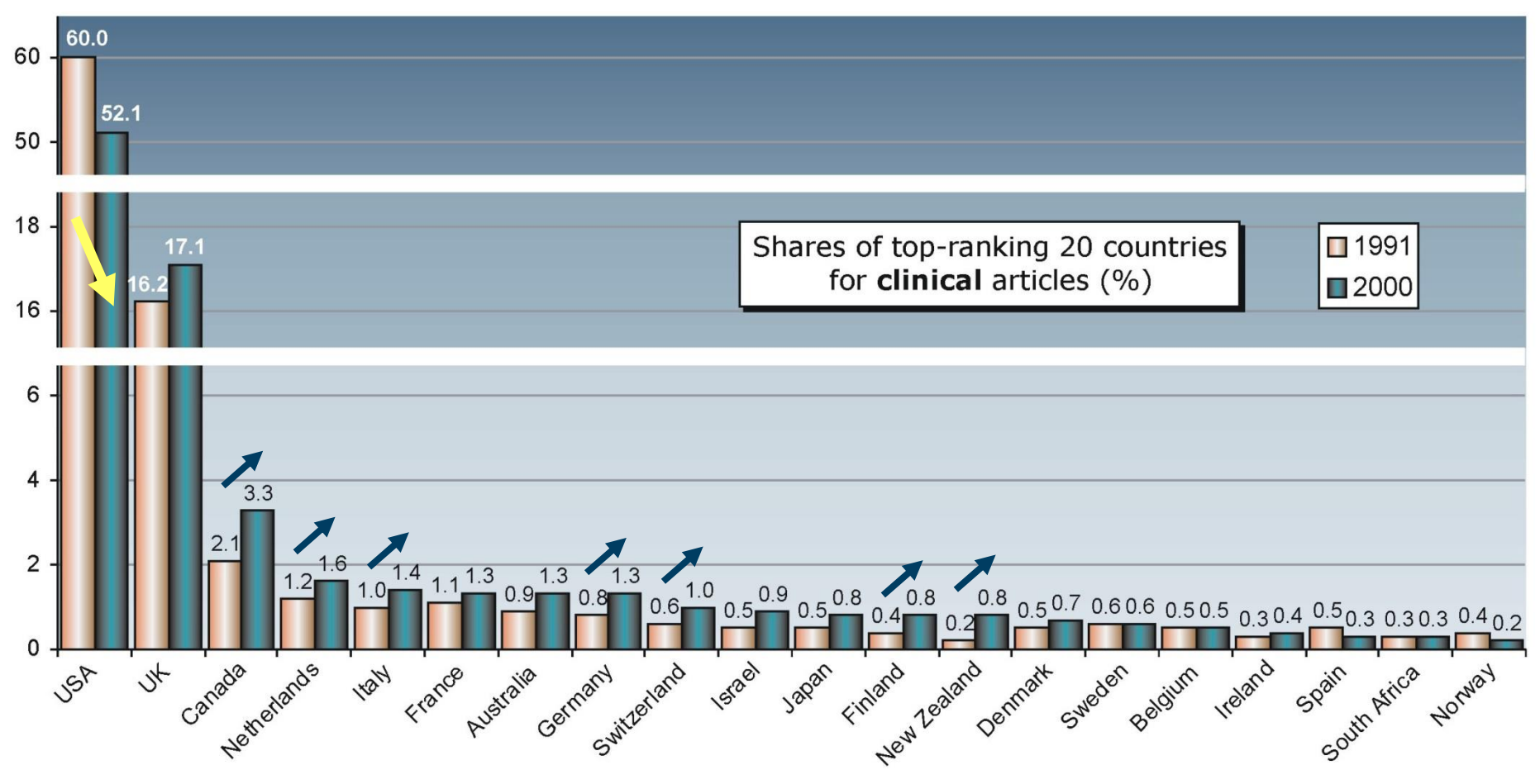
A decline in the US share of research articles (1)



Basic science journals: *Cell, Nature, Nature Genetics, Nature Medicine, Neuron, Science*

Rahman M & Fukui T: NEJM 347, 1211-1212, 2012

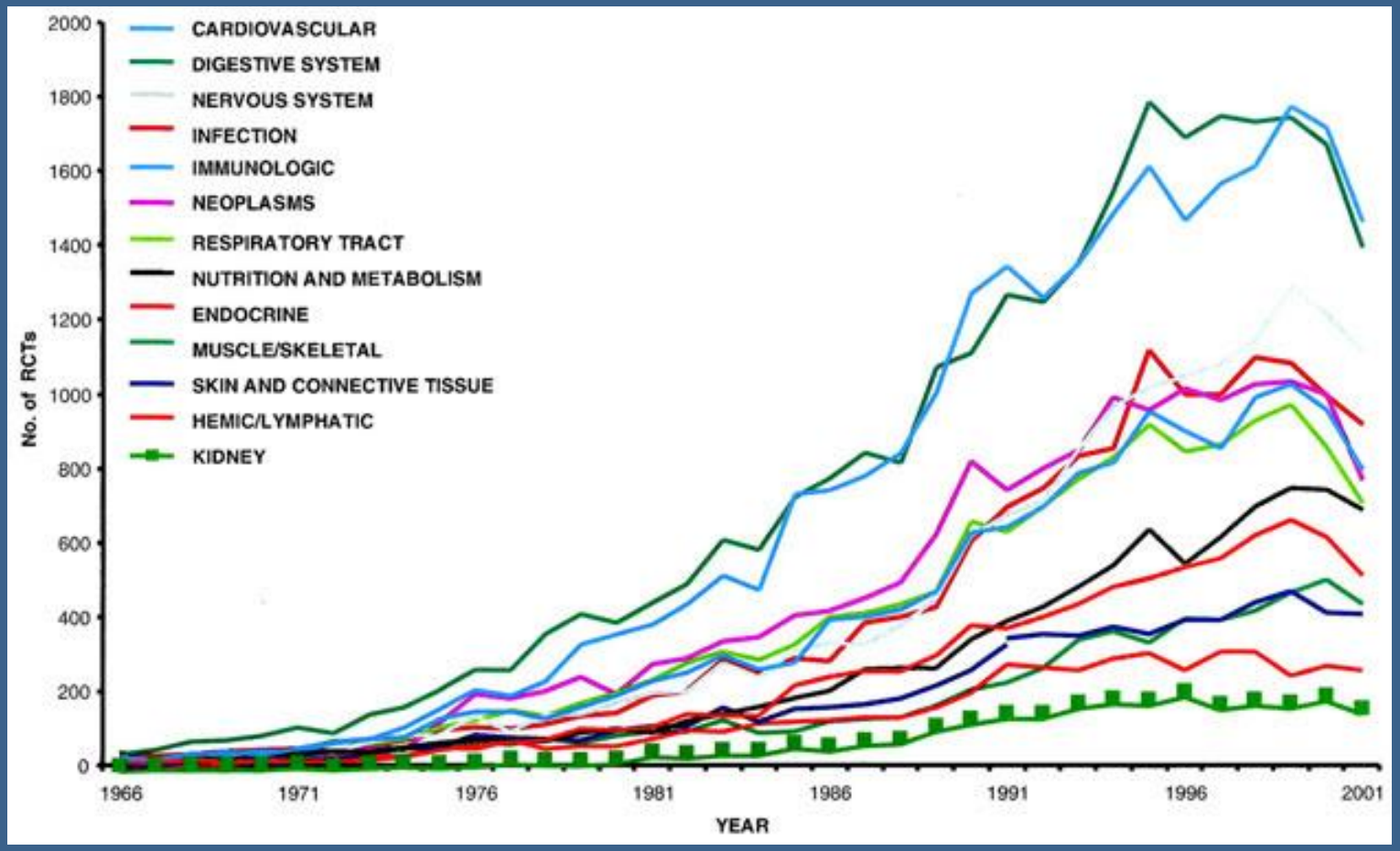
A decline in the US share of research articles (2)



Clinical journals: *American Journal of Medicine, Annals of Internal Medicine, Archives of Internal Medicine, British Medical Journal, Journal of the American Medical Association, Lancet, New England Journal of Medicine*

Rahman M & Fukui T: NEJM 347, 1211-1212, 2002

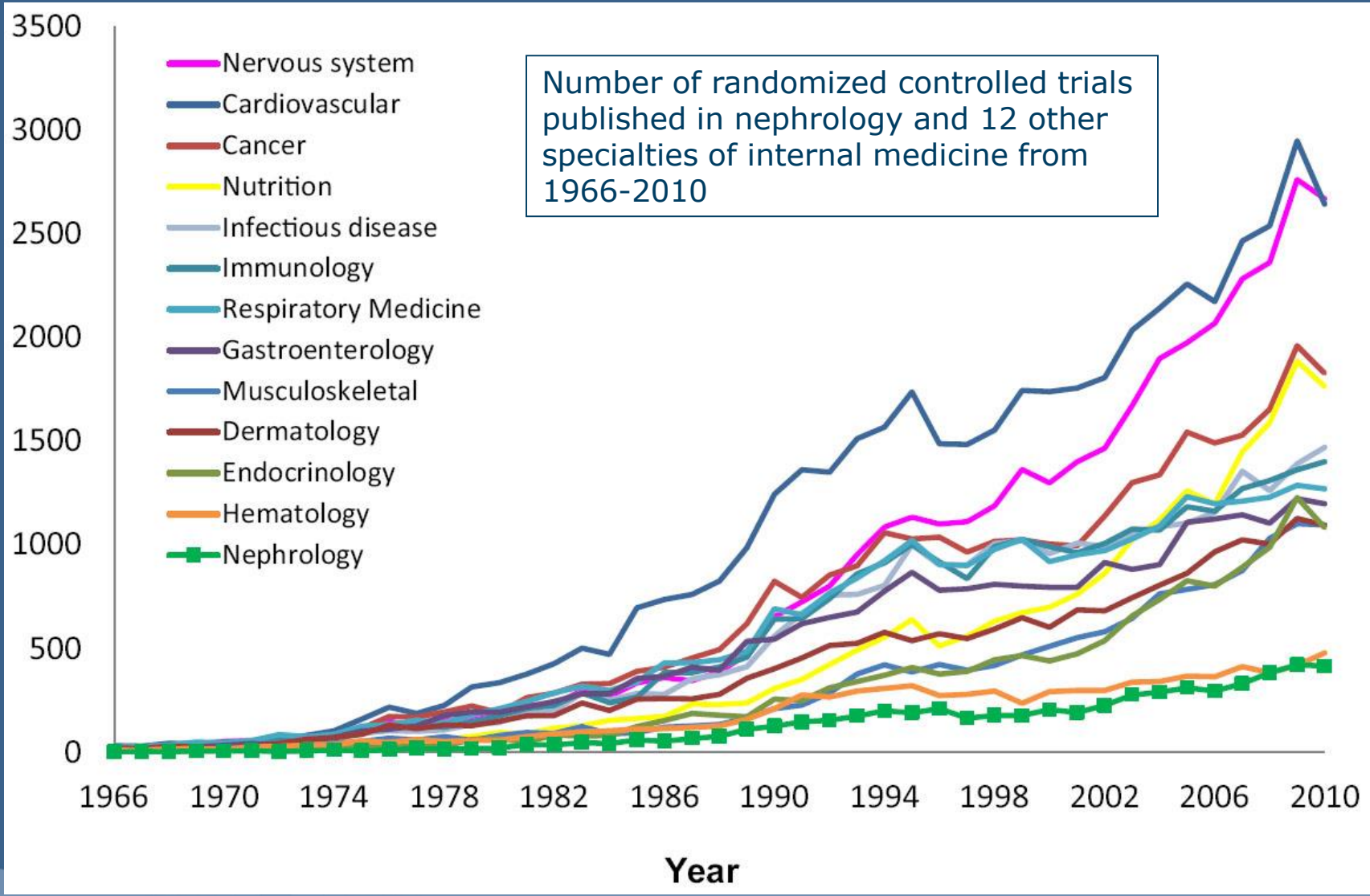
The number, quality, and coverage of randomized controlled trials (RCTs) in nephrology



Number of randomized controlled trials (RCT) published in nephrology and 12 other specialties of internal medicine from 1966 to 2002

Strippoli GF: JASN 15: 411-419, 2004

Trial quality in nephrology: how are we measuring up?



Palmer SC et al: Am J Kidney Dis 58:335-337, 2011

The number, quality, and coverage of randomized controlled trials (RCT) in nephrology

- The **number of RCT** published in nephrology from 1966 to 2002 (2779) is fewer than all other specialties of internal medicine ,persisting when evaluated until 2010
- The **proportion** of all citations which are RCT related: third lowest
- The **increase** in both indices from 1966 to 2010 is **at a lower rate** than other specialties
- Slight increase **over the past 8 yr** is observed
- Glomerulonephritis is an outlier with very low numbers of RCT
- Industry dependence ... **investigator-driven research**

Strippoli GF: JASN 15: 411-419, 2004

Impact factor
NEJM 2004

$$\frac{\text{Citations* in 2004:}\quad \underset{(2003)}{14\,147} + \underset{(2002)}{14\,549}}{\text{Papers:}\quad \underset{(2003)}{366} + \underset{(2002)}{378}} = 38.6$$

- =to research articles, technical notes, reviews, guidelines not to editorials, letters, meeting abstracts (JASN)

- **Hirsch -h-**
- **MDB H index 56.(number of papers cited more than 56 times)**

Factors that Bias the Calculation of the Impact Factor

- Coverage and language preference of the SCI database
- Procedure used to calculate citations at ISI
- Algorithm usd to calculate the IF
- Citation distribution of journals
- Online availability of publications
- Citations to invalid articles
- Negative citations
- Preference of journals publishers for articles of a certain type (guidelines, reviews,RCTs …..)
- Publication lag
- Posssibility of exertion of influence from journal editors
- JASN abstracts ASN counting as citations not as papers

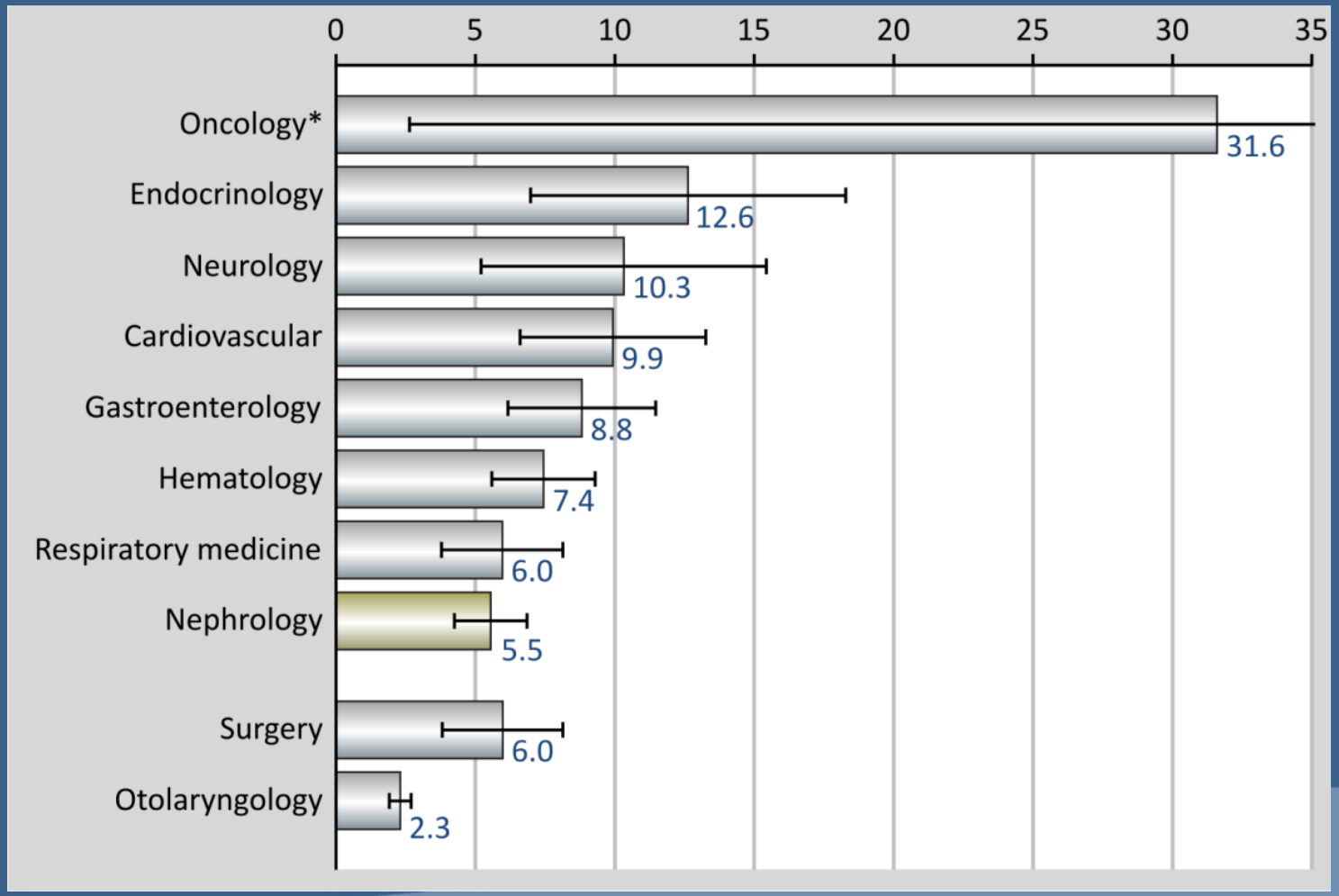
Peng Dong et al Biom. Digital. Lib. 2 , 7—17 2005

Ranking of nephrological journals
according to impact factor (>1 2011)

1.	J Am Soc Nephrol	7.5
2.	Kidney Int	6.6
3.	Nat Clin Pract Nephr	5.6
4.	Am J Kidney Dis	4.8
5.	Clin J Am Soc Nephrol	4.4
6.	Curr Opin Nephrol HY	4.0
7.	Am J Physiol – Renal	3.9
8.	Nephrol Dial Transpl	3.6
9.	Am J Nephrol	3.2
10.	Semin Nephrol	2.9
11.	Semin Dialysis	2.7
12.	Pediatr Nephrol	2.3
13.	Nephron Physiol	1.9
14.	Periton Dialysis Int	1.9
15.	Contrib Nephrol	1.8
16.	Blood Purificat	1.7
17.	Nephron Clin Pract	1.7
18.	Adv Chron Kidney D	1.7
19.	Nephron Exp Nephrol	1.6
20.	Clin Nephrol	1.4
21.	Ther Apher Dial	1.3
22.	Kidney Blood Press R	1.3
23.	Nephrology	1.2
24.	J Nephrol	1.2
25.	J Renal Nutr	1.2

De Broe M E unpublished

Mean and SD of the impact factor of the 7 highest ranked journals of a number of medical disciplines



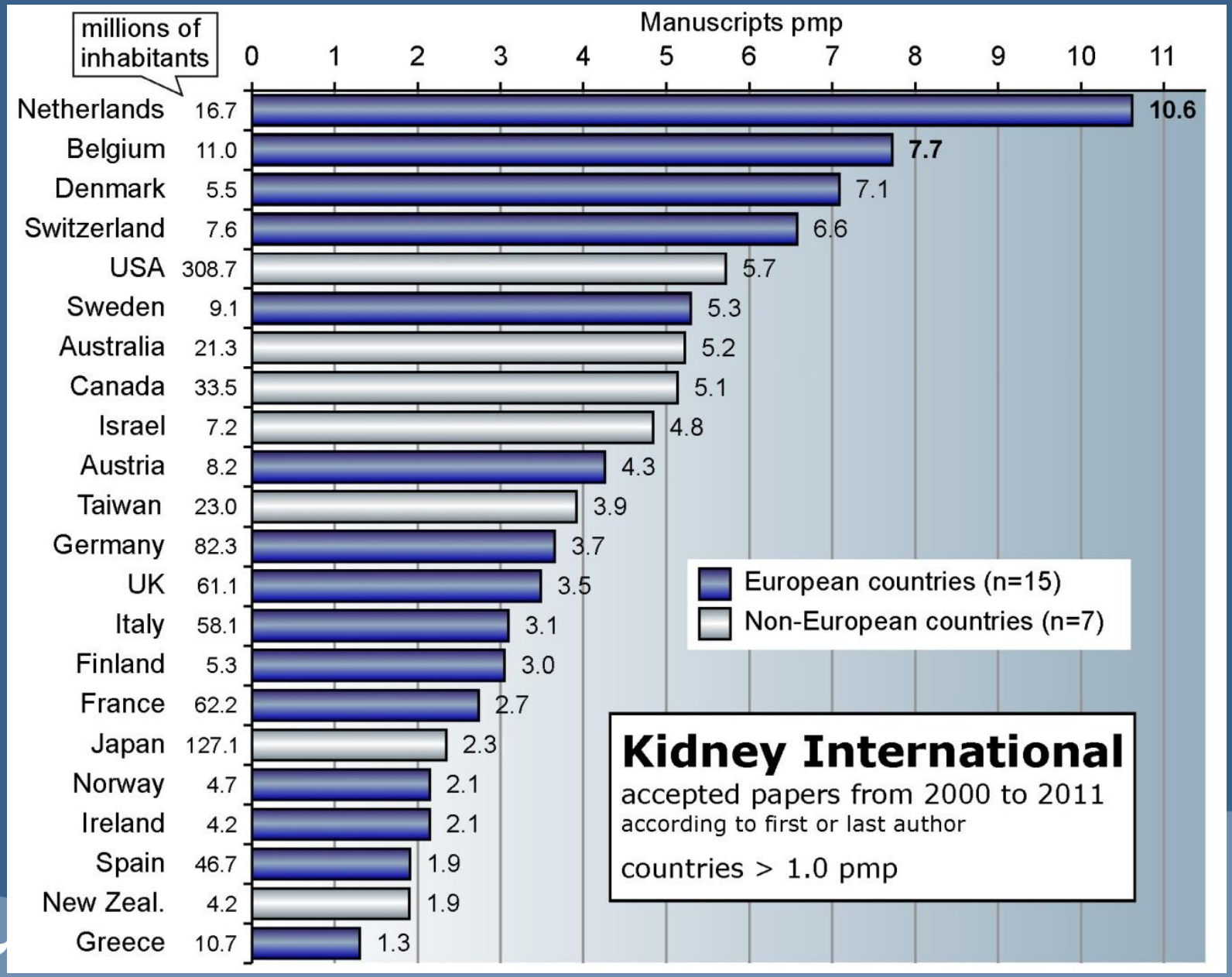
* CA - A Cancer Journal for Clinicians: IF 94.3

statistics, guidelines, RCT's

De Broe ME unpublished

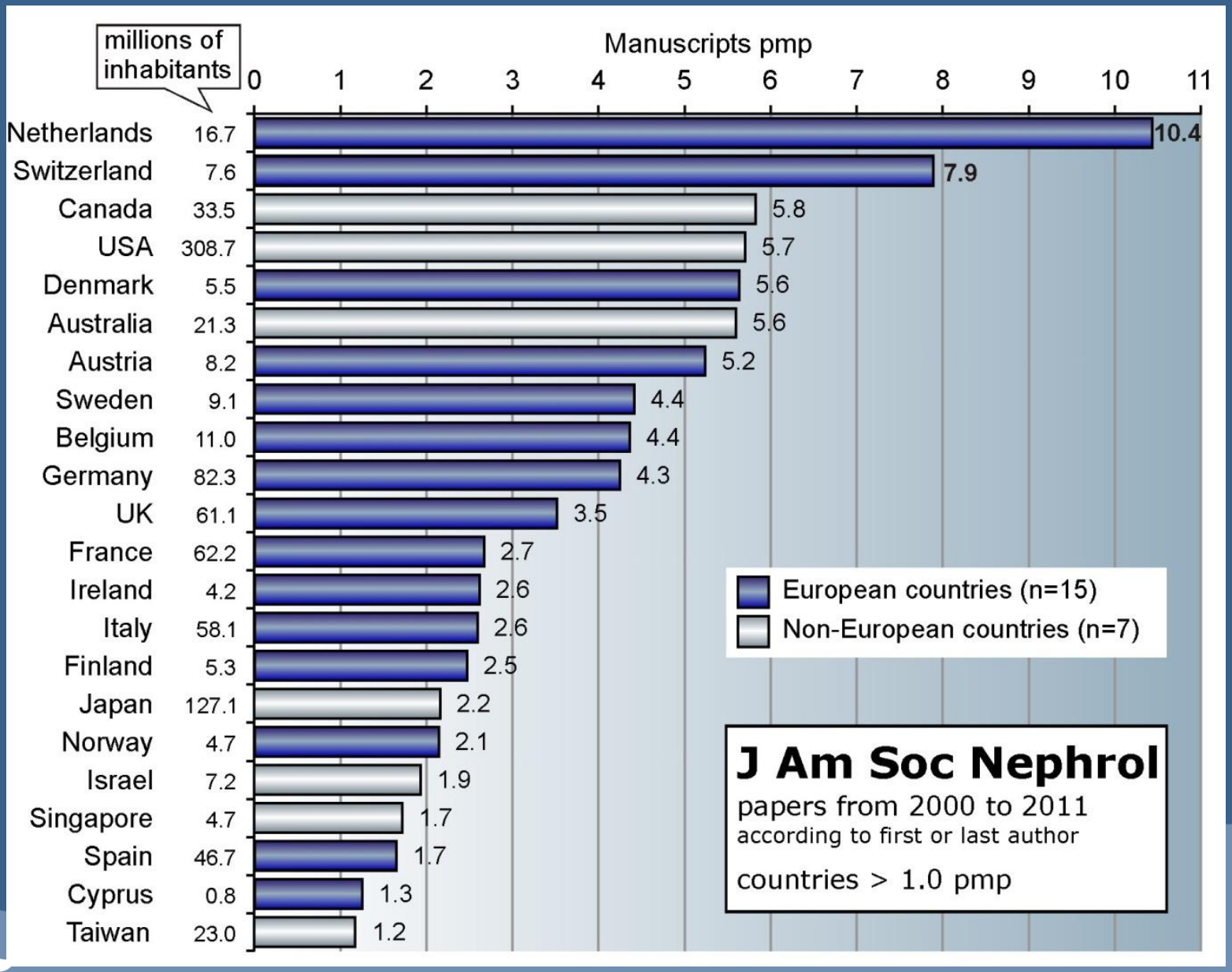
Kidney International

Number of papers per million population 2000-2011



De Broe M E unpublished

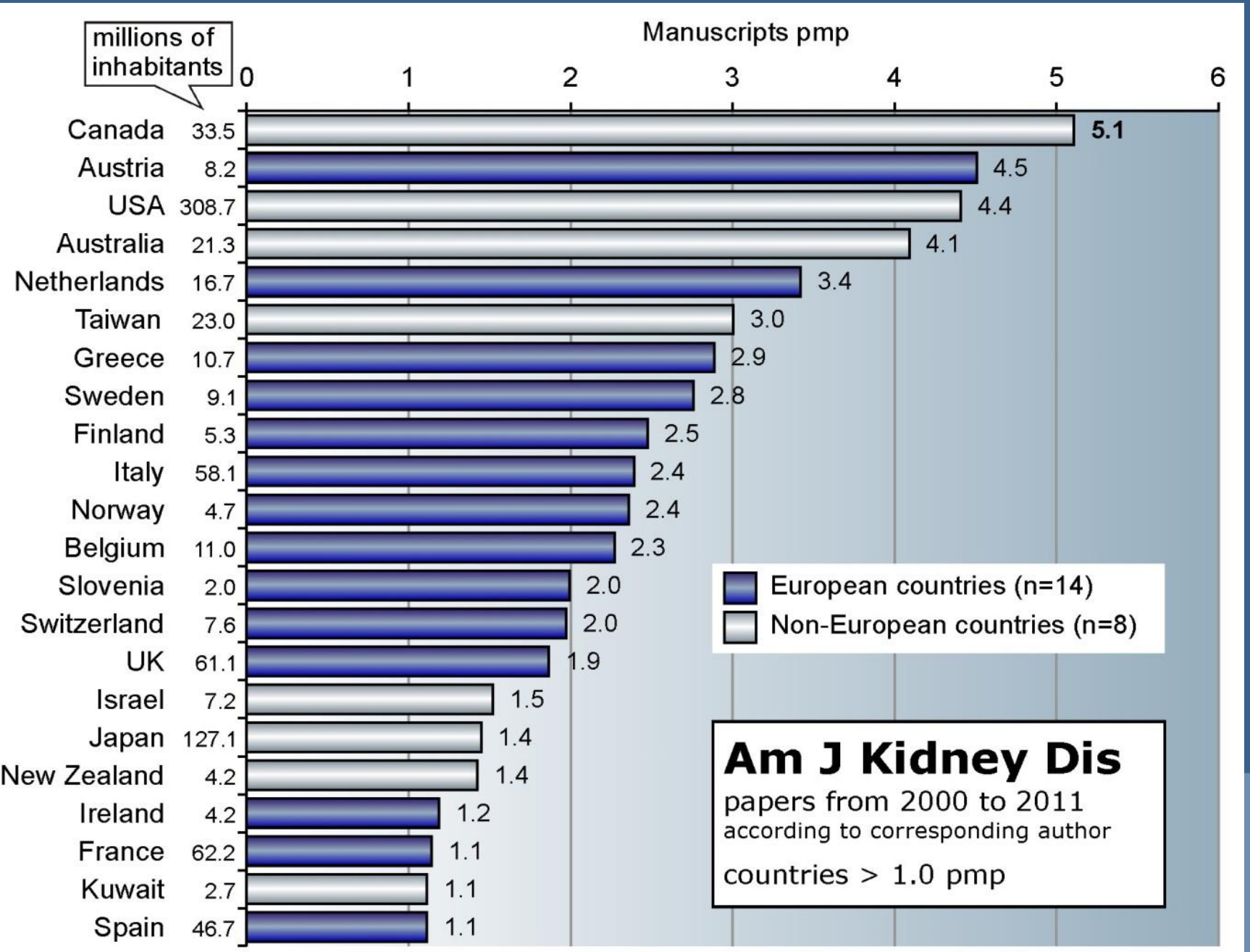
J Am Soc Nephrol Number of papers per million population 2000-2011



De Broe M E unpublished

Am J Kidney Dis

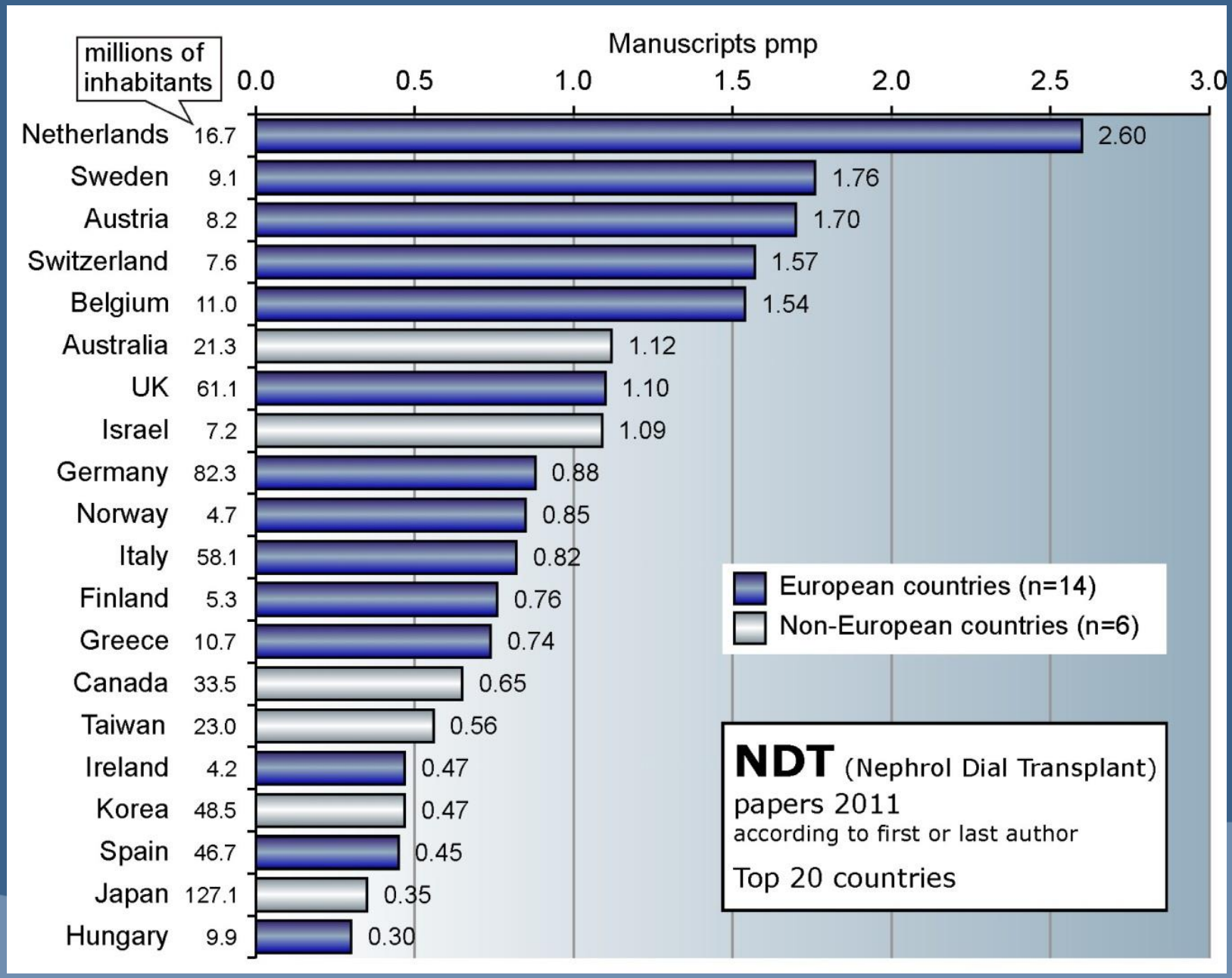
Number of papers per million population 2000-2011



De Broe unpublished

Nephrol Dial Transplant

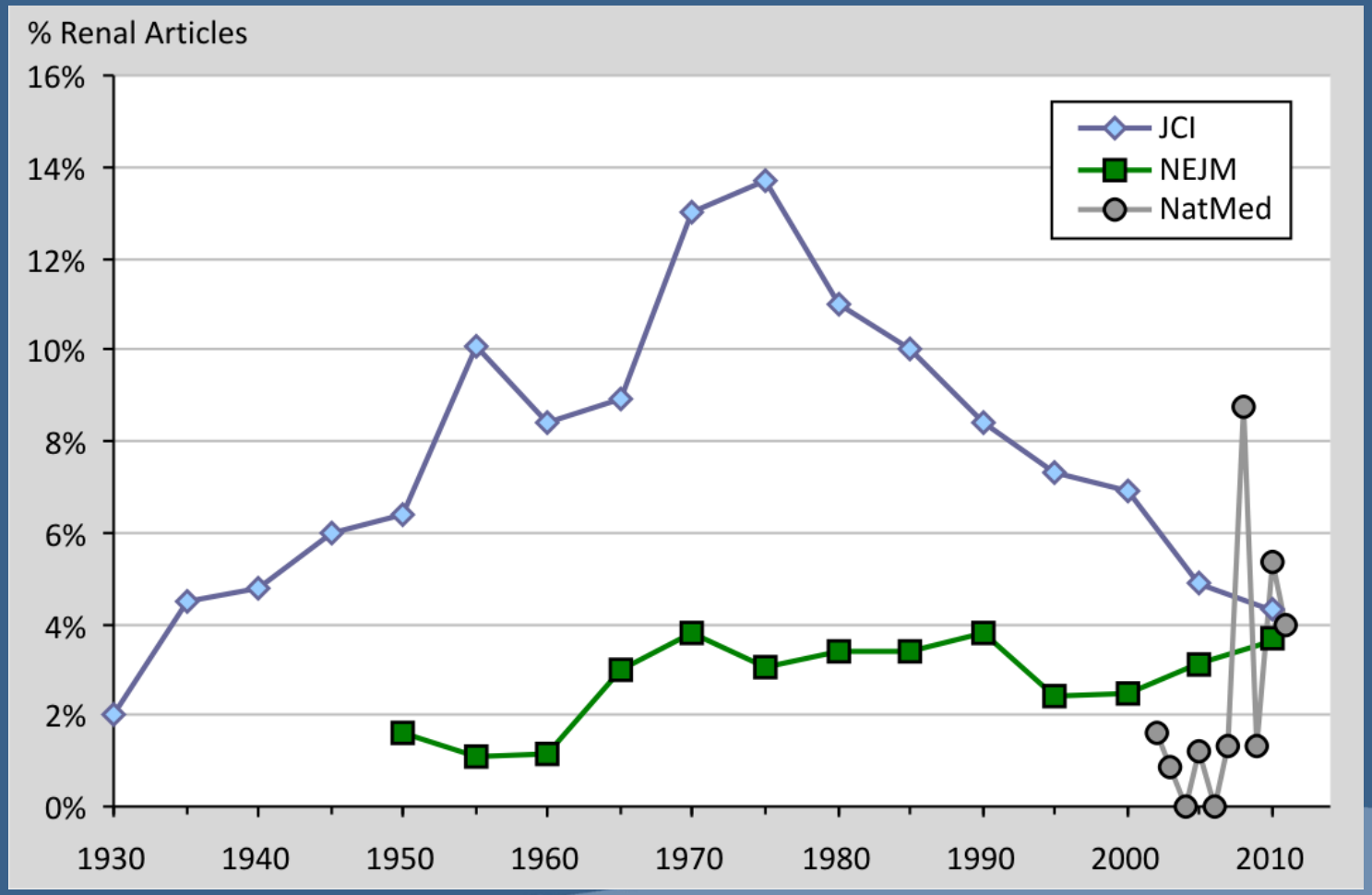
Number of papers per million population 2011



De Broe M E unpublished

Renal articles in leading medical journals

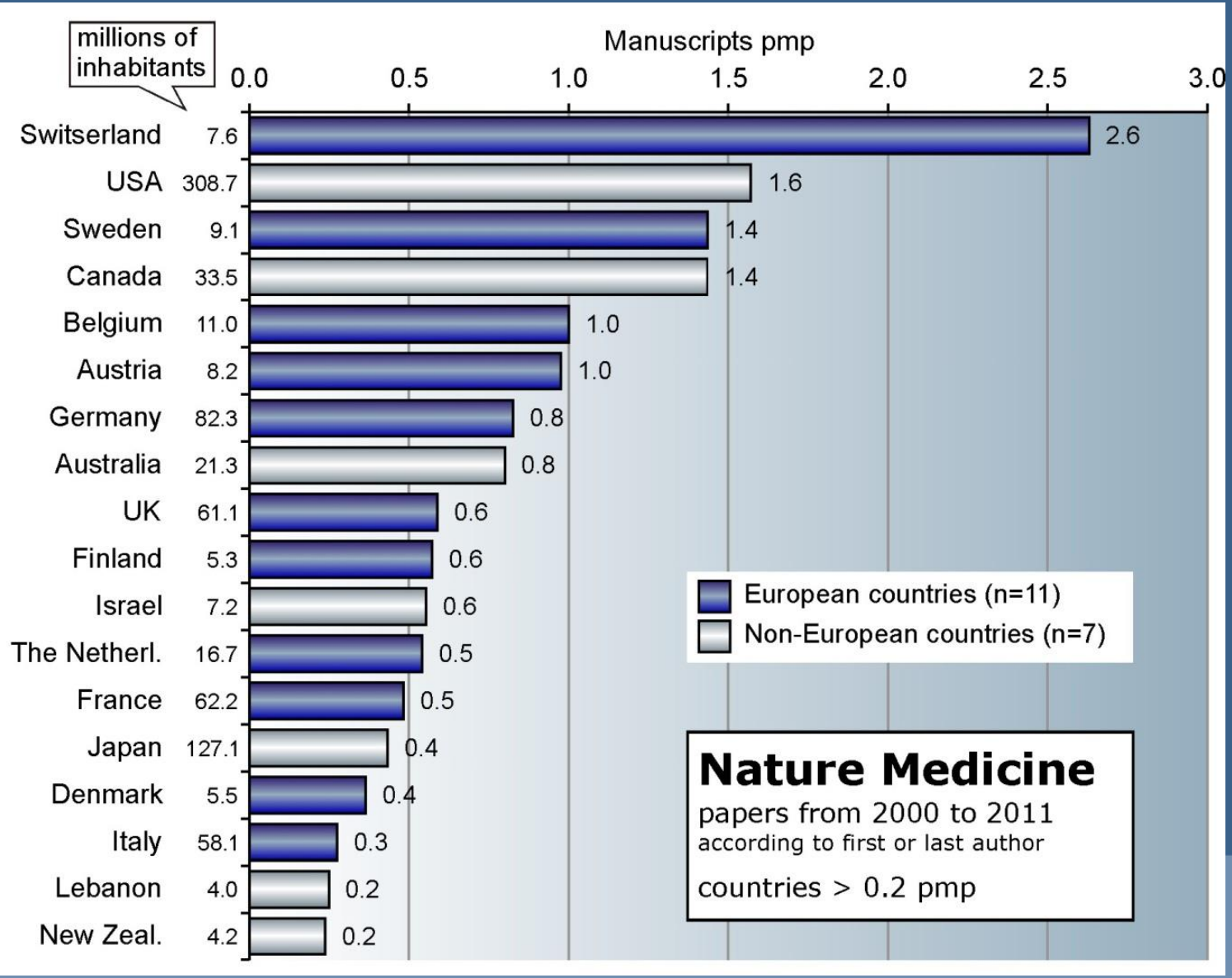
- Journal of Clinical Investigation
- New England Journal of Medicine
- Nature Medicine



Al Quati Q, Snelders E, De Broe ME

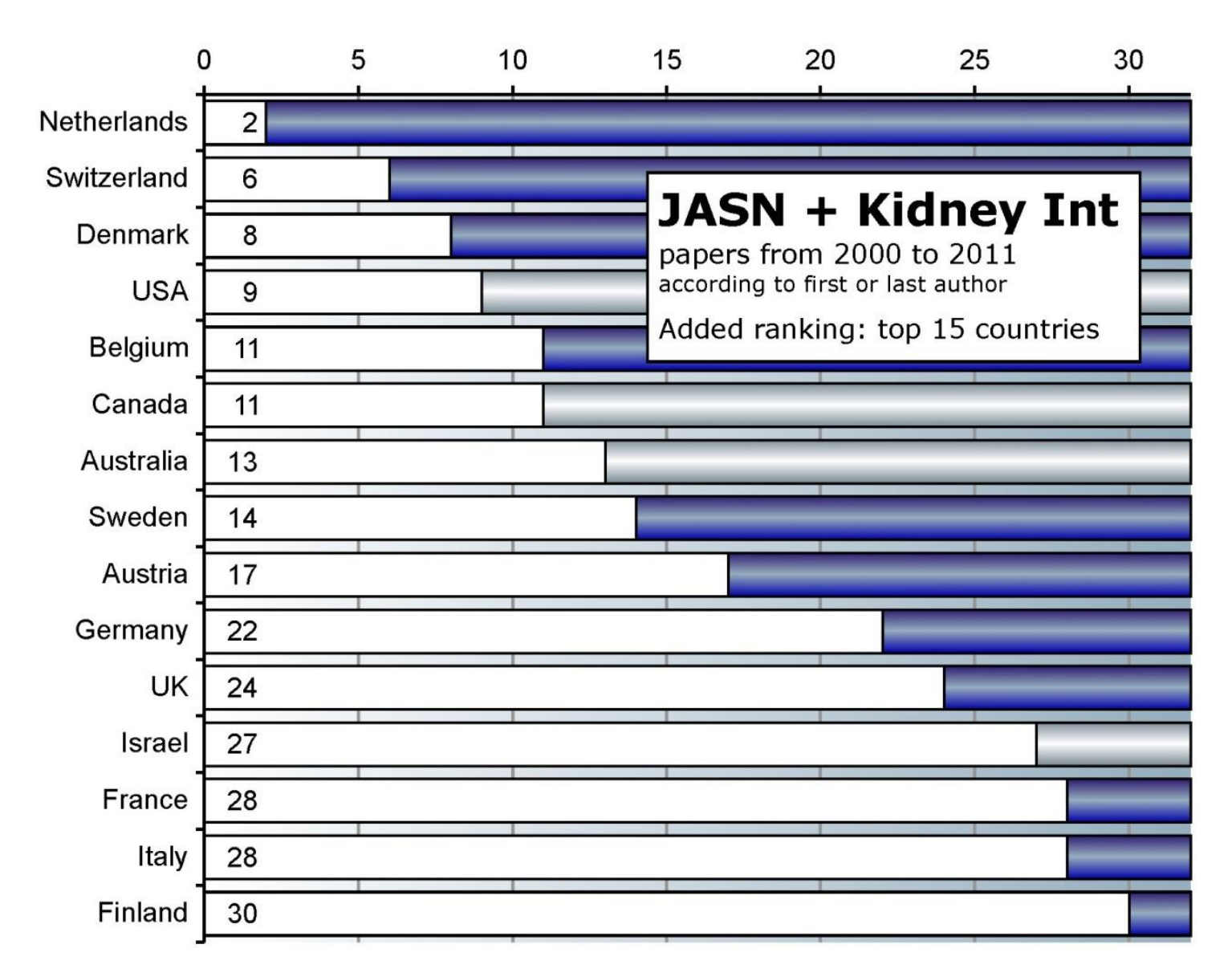
Nature Medicine

Number of papers per million population 2000-2011



De Broe M E unpublished

JASN + Kidney Int ranking 11/15 are European countries



De Broe M E unpublished

The Netherlands

- 165 nephrologists - 30% in university hospitals
- Until recently (still majority)– nephrologists – PhD
- 3-5 papers in peer reviewed journals with high impact factor (6 best journals in nephrology),three as first author;
- Research funding
  - NWO – fundamental research – predoc, postdoc
  - diabetes, rheuma, ...
  - faculties – postdoc for clinicians
  - hospital clinical research
  - EC
  - NIH, others
  - **Nierstichting** >>
- Nederlandse Vereniging Nefrologie – multicenter trials

De Broe M E unpublished

Nierstichting The Netherlands

NIERSTICHTING

www.nierstichting.nl

Total income 2006: 15 x 10^6 €
75% spent in research support

INCOME (thousands of euros)

Collection	4548
Mailing actions	5286
Legacies	4065
Gifts	268
Assoc. friends	488
Sponsoring	287

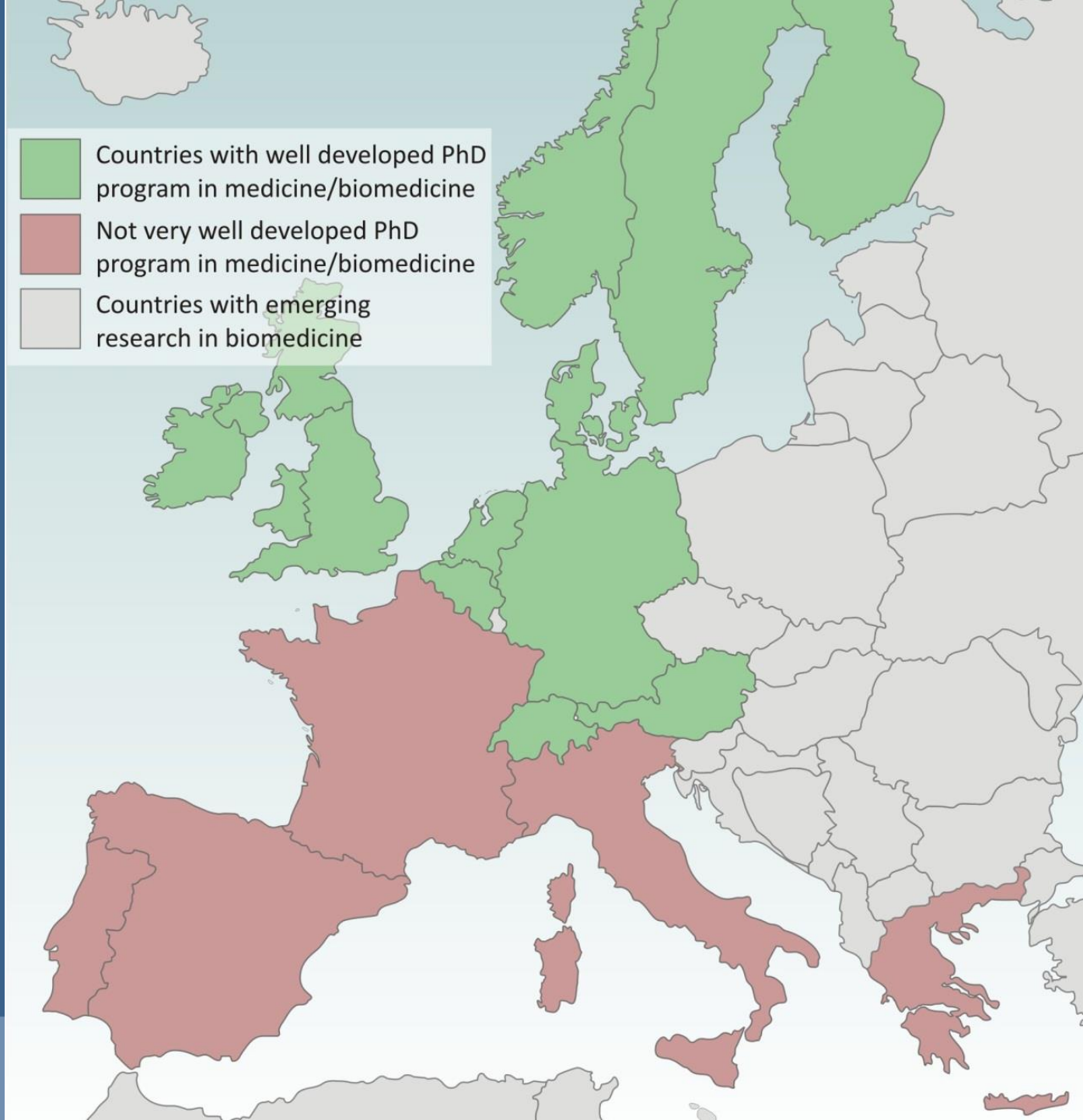
Consortia (3 centra)
Innovative grants
Kolff program

EXPENSES (thousands of euros)

Collection	383
Mailing actions	2141
Innovation in Care	109
Prevention	3002
Biomedical research	4550
Social policy/patient care	1791
Communication	2693
Children with kidney disease	408
Patient associations	774
Personell	2709
Travel	258
Office	503

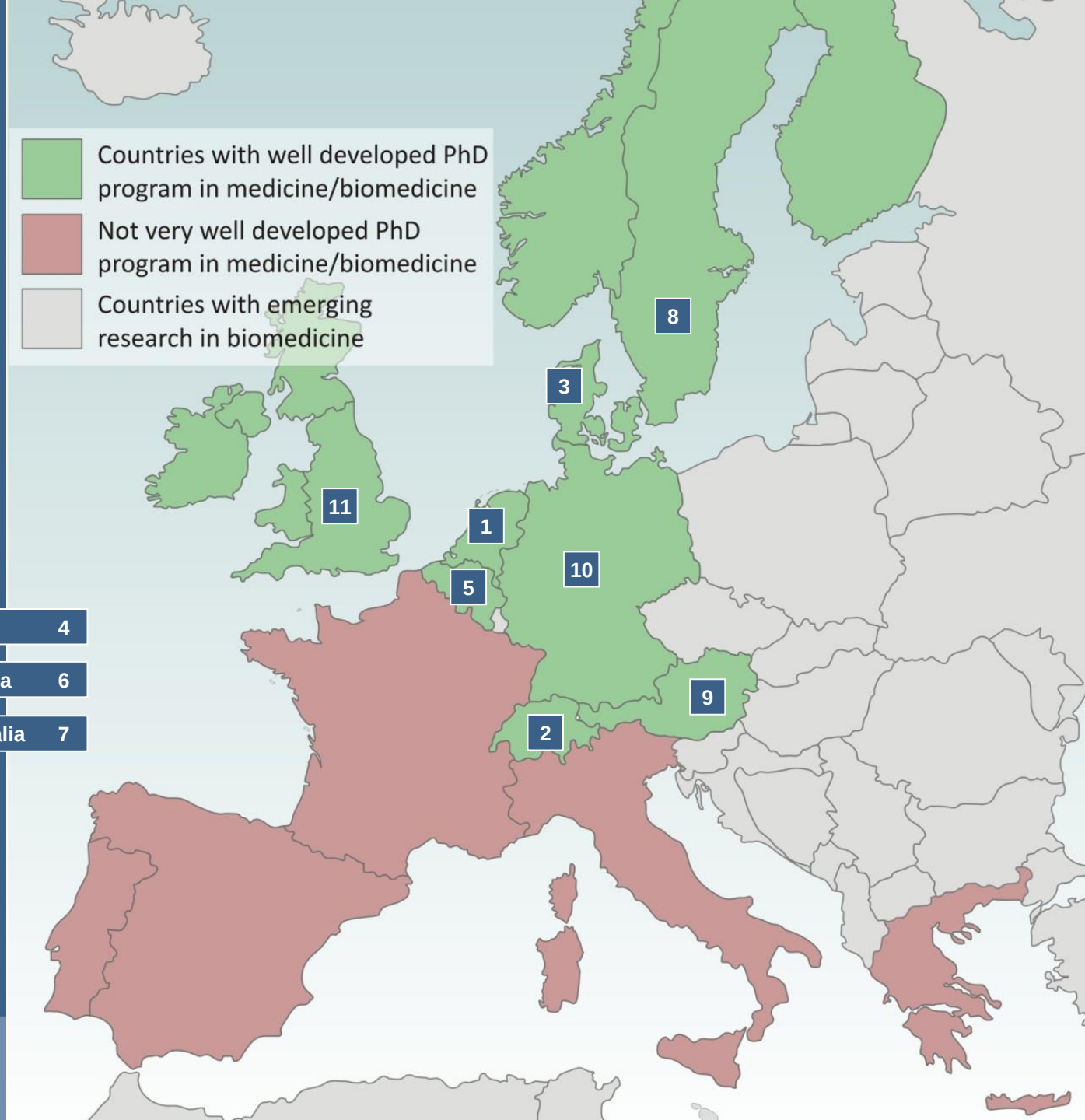
Extracted from: De Nierstichting Financial Report 2006

Ter Wee personal communication 2012



De Broe M E
unpublished

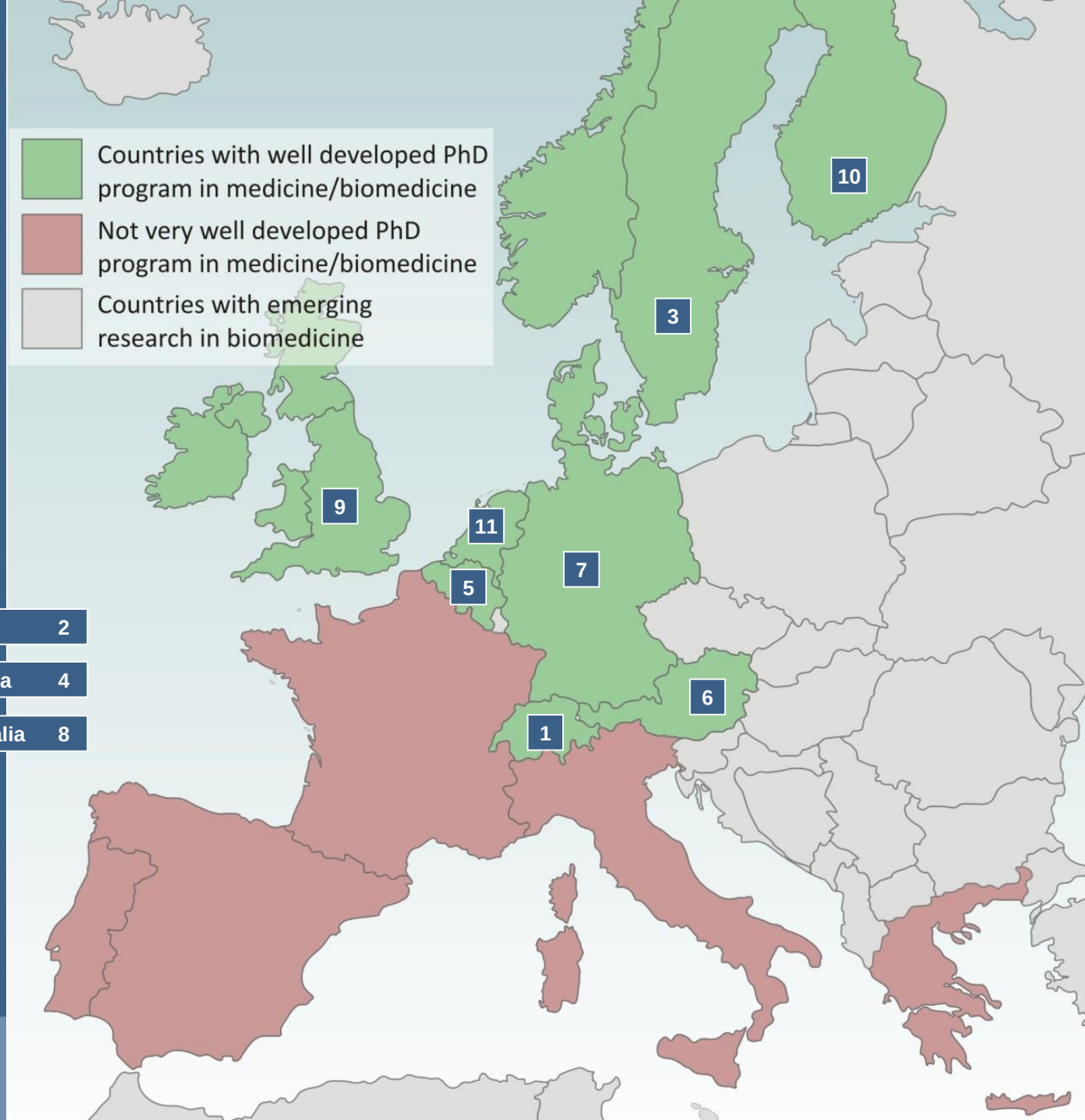
Kidney Int + JASN rank order



USA	4
Canada	6
Australia	7

De Broe M E
unpublished

Nature Medicine rank order



USA	2
Canada	4
Australia	8

De Broe M E
unpublished

The clinical researcher

- Clinical research more difficult compared to basic research

- Probability of success is less
- "Bibliometric" performance is lower

- "Pace" is much lower
- Salaries >< practicing medicine

- Lower chance for funding
- Demands for clinical income, efficiency

- Insufficient "protected time"
- Isolation of young clinicians for active research

- Loss of scientist role model and experienced mentor

"The two way interaction between bench and bedside is weakened"

Sheridan DJ: Lancet 367: 1698-1701, 2006
Kaiser J: Science 311: 1852-1854, 2006

How to improve clinical/translational research

- Link clinical medicine – basic research ↑
- Save the MD and PhD species from extinction
- Create research careers / adequate funding / clear career path
- Stimulate –create centers of excellence in clinical research - investigater driven (Unidad Central de Investigacion Clinica y Ensayos Clinicos UICICEC)
- How to implement new medical developments and therapies
- European framework programs: funding hypothesis-driven research – less bureaucratic – avoid duplication
- Top industrial R&D investment > Europe

- HIGH QUALITY PhD PROGRAMS (EDTA-ERA)

Sheridan DJ: Lancet 367: 1698-1701, 2006
Kaiser J: Science 311: 1852-1854, 2006

CONCLUSIONS

Current clinical-translational research in Nephrology do not belongs any more to the top ranked internal medicine disciplines .

The number of RCT's in nephrology was and remains the lowest of all disciplines in internal medicine over the last 15 year .

The country related output in the top three nephrology journals is very different from country to country. Europe has a leading position in such a ranking;

Some European countries (the Low lands ,Scandinavian countries, Switserland and Austria) are among the most competitive in the world

A well organized quality PhD program in renal biomedical research seems to be a good predictor of high scientific output.

Developing a high quality European PhD program supported by the EDTA.ERA ,within his available initiatives , could be a worthwhile project, helping to improve the competitiveness of "renal" research in Europe.