

Economists' Perspectives on the Use of Antibiotics in NL: Improving the Value of the Health Care System

A Presentation to Quality of CARE NL's Antibiotics FutureForum

By

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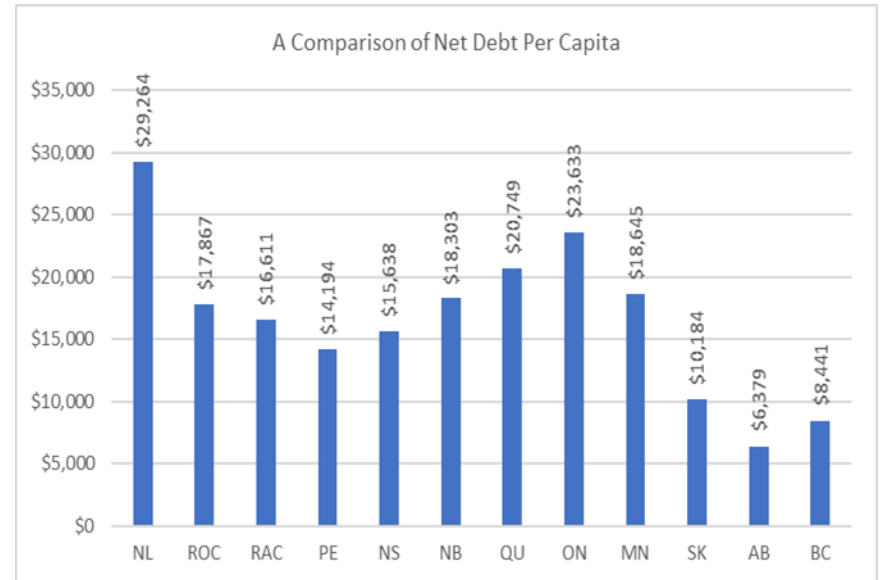
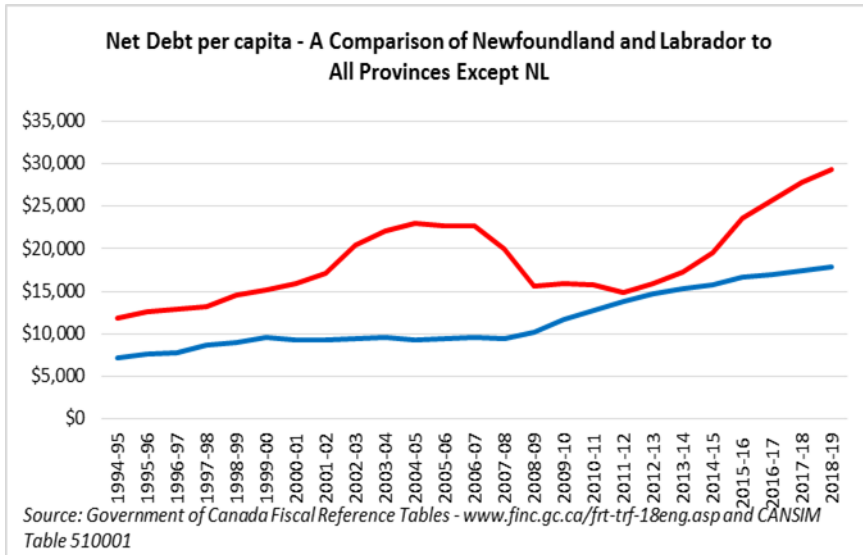
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and

The Collaborative Applied Research in Economics (CARE) initiative

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Rm 1M101, Faculty of Medicine

Net Debt Per Capita



NL is used to running deficits, recording a deficit in 85% of the years since we joined confederation

NL debt per capita is more than any other province and 164% of the CDN average

NL debt charges per capita is more than any other province and more than double the CDN average

NL has a fiscal problem

How Big Would the Surplus have to be Every Year to Retire \$15.4 B in Net Debt

$$I = B_1 * \frac{B_2 * (1 + B_2)^{D_1}}{(1 + B_2)^{D_1} - 1}$$

Capital Recover Factor

B1 = amount borrowed

B2 = interest rate

D1 = Repayment Period

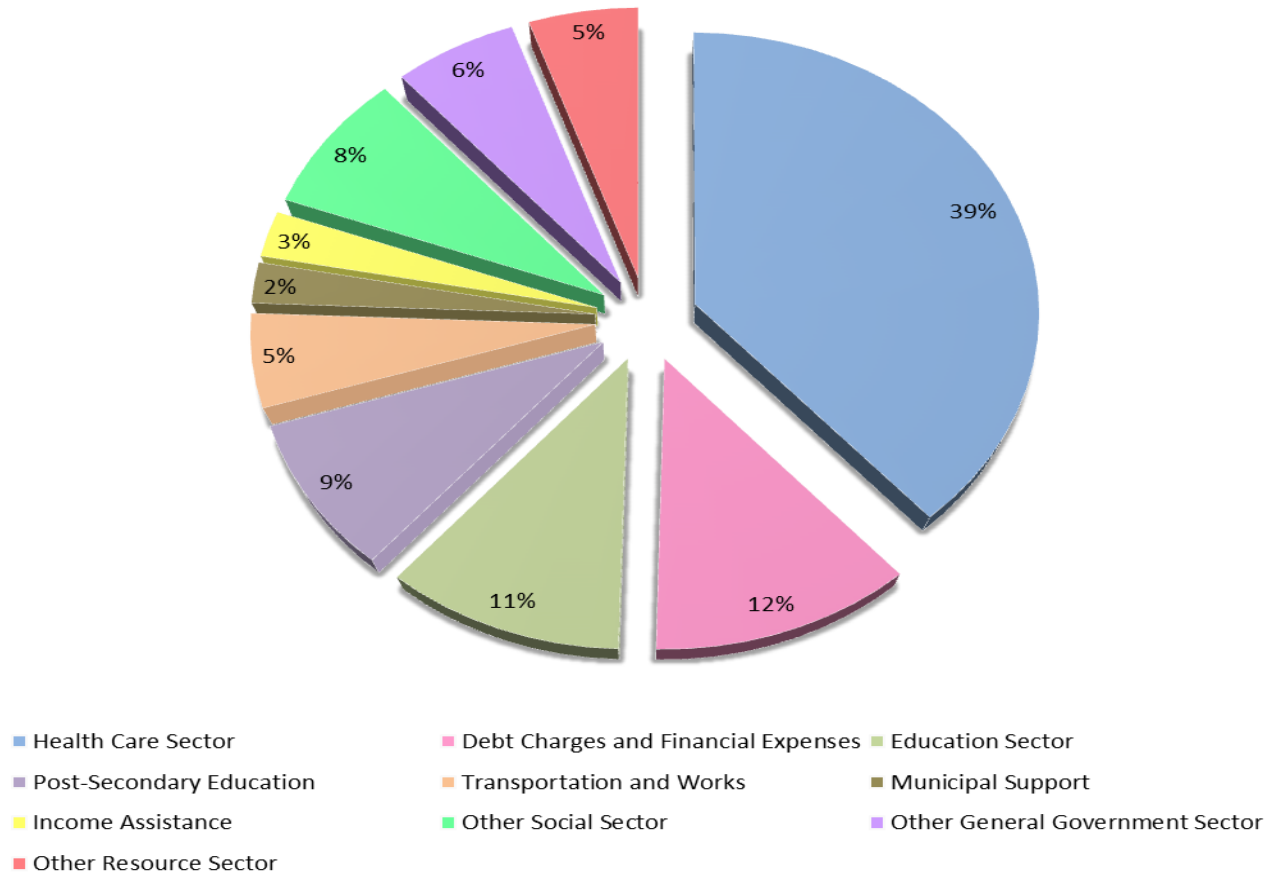
I = amount repaid each year

Interest Rate	25 Years Repayment	50 Years Repayment	75 Years Repayment
3%	\$883	\$598	\$518
4%	\$984	\$716	\$649
5%	\$1,091	\$842	\$789
6%	\$1,203	\$975	\$934

We would need a surplus of \$600 M per year for the next 50 years and it all would have to be applied to debt retirement at a 3% borrowing cost in order to retire \$15.4 B in net debt

So we have a fiscal problem and it will not be easy to deal or manage

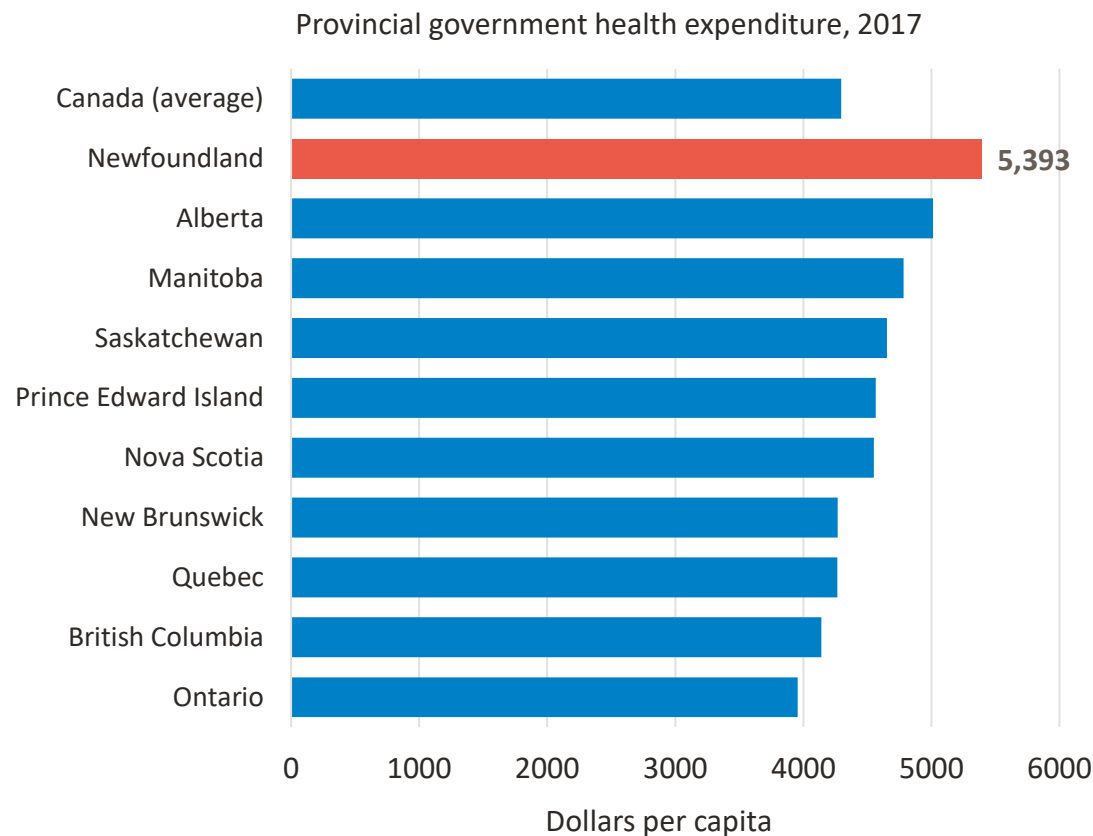
Summary of Current Account Expenditures by Function



Source: <https://www.gov.nl.ca/fin/budget/pre-budget-consults/prebudget2019/>

It is not clear where we can cut, but expenditure has to be controlled

NL health system has high per capita spending



Source: CIHI

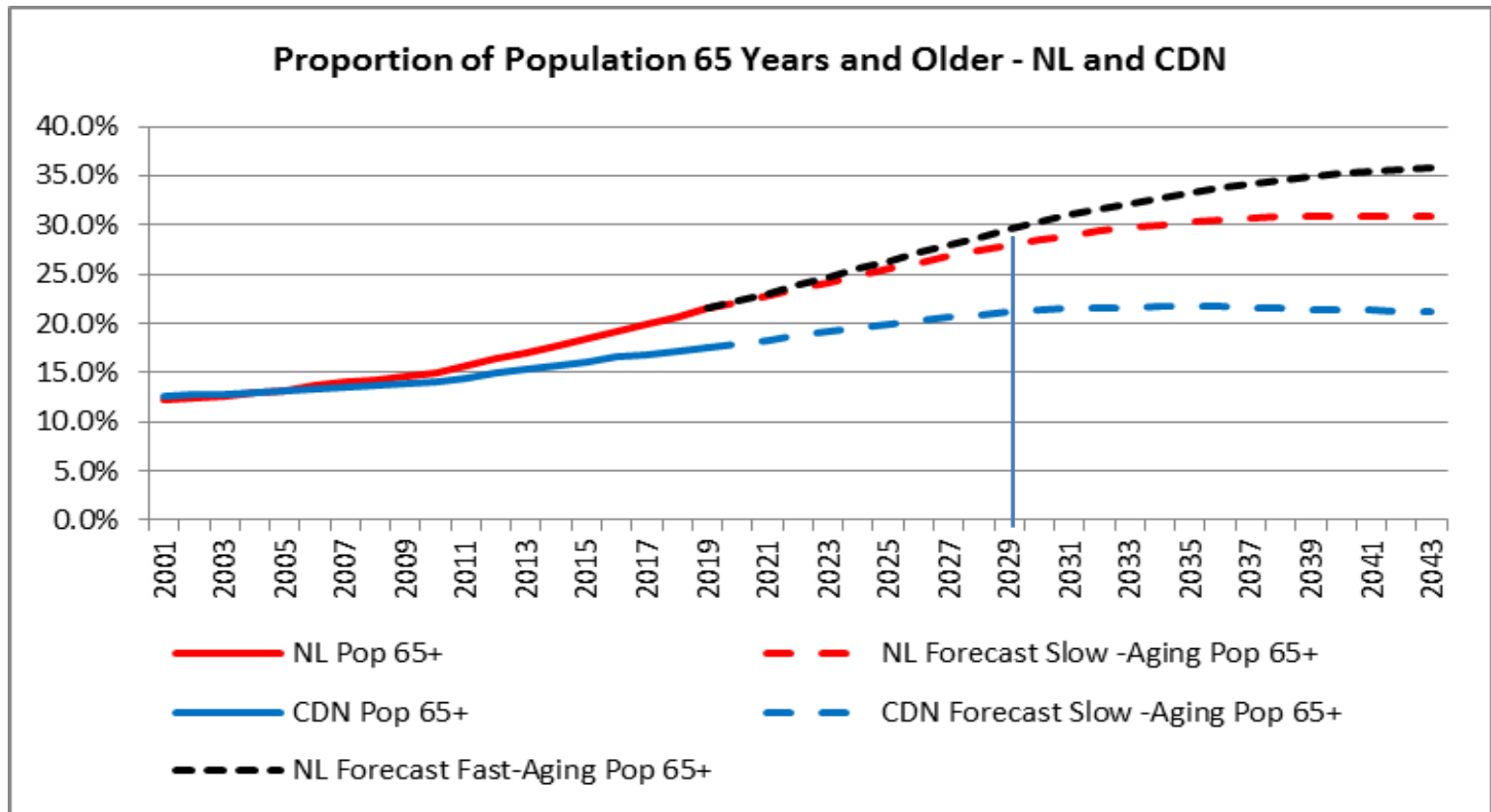
From Parfrey Nov 14, 2019: On improving the value of health care spending in NL

But health care is **not** the only input into producing health. Health of individuals and population depends on many other factors:

- Environment
- Genetics
- Lifestyle
- Education
- Social Capital
- Economics (income, etc.)

Estimates suggest health care has modest impacts on population health improvements – behavioural, economic and social determinants larger!

Aging Population

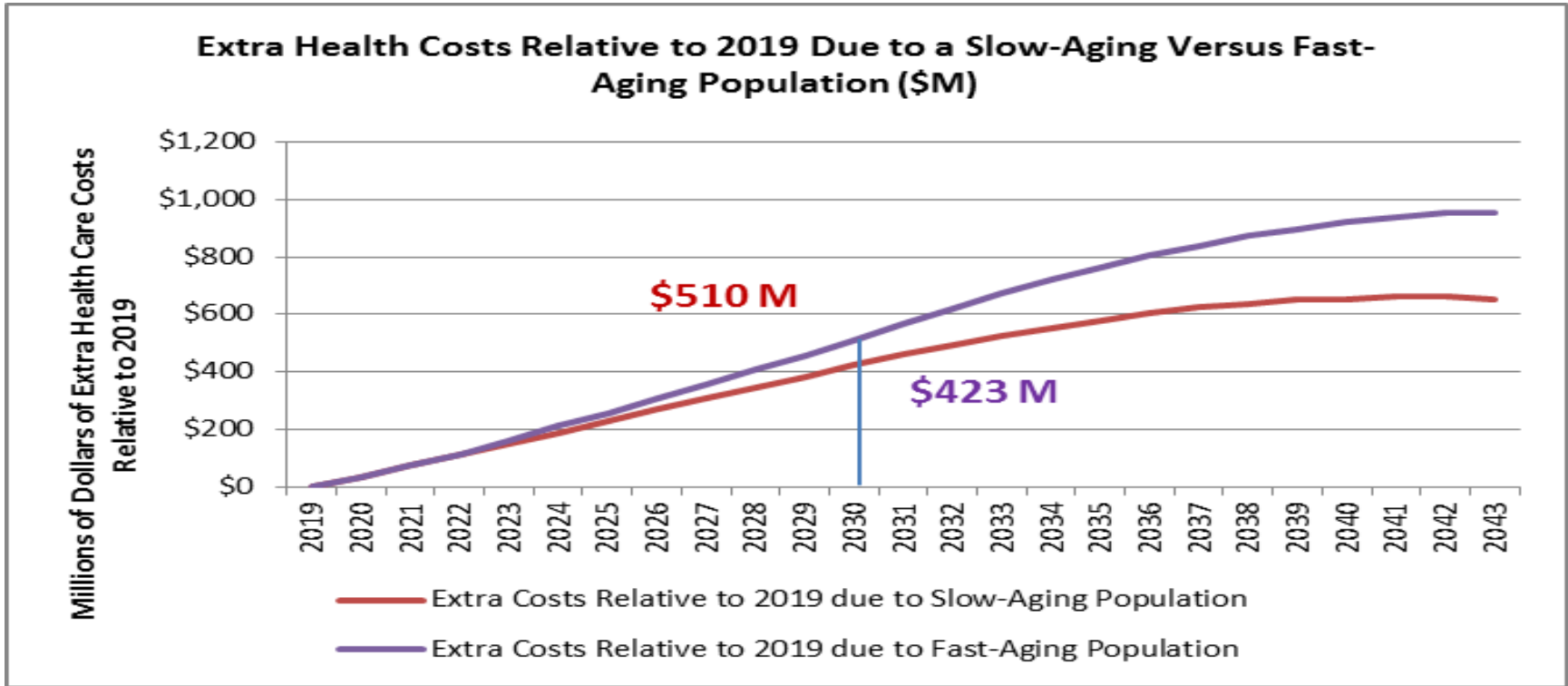


Currently NL has 21.5% and CDN has 17.5% of their populations 65 years of age and older

By 2030, NL will have between 28.5% and 30.3% of population above 65 years and total population to fall between 497,000 and 506,000 people

By 2043, population is forecast to be between 450,000 and 470,000 people

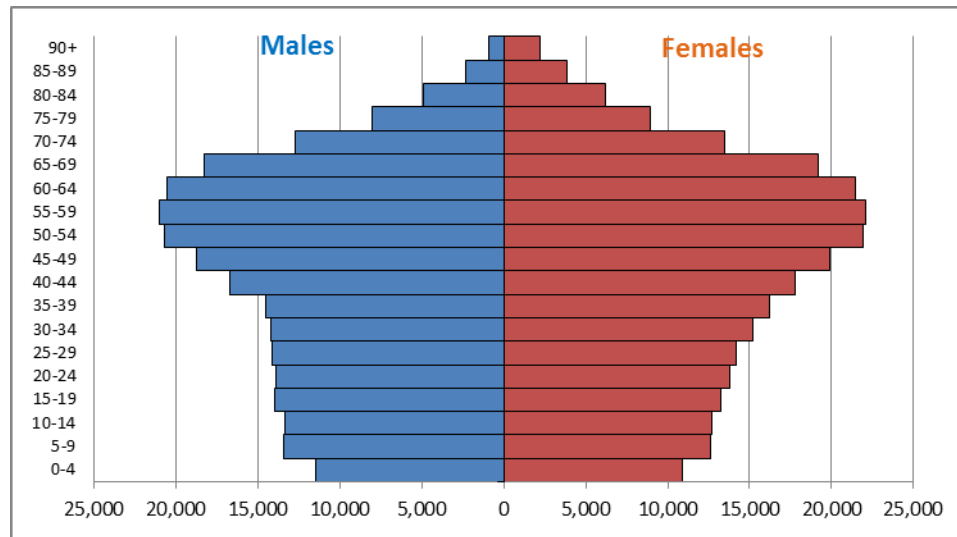
Aging Population – Constraint on Health Care Cost



Everything else the same, NL will need between 13.6% and 16.5% extra per year relative to 2019

Assuming no change in things such as salaries for providers, cost of antibiotics, use of antibiotics, resistance to antibiotics, additional infrastructure to deal with the divergent needs geographically to deal with aging population, etc

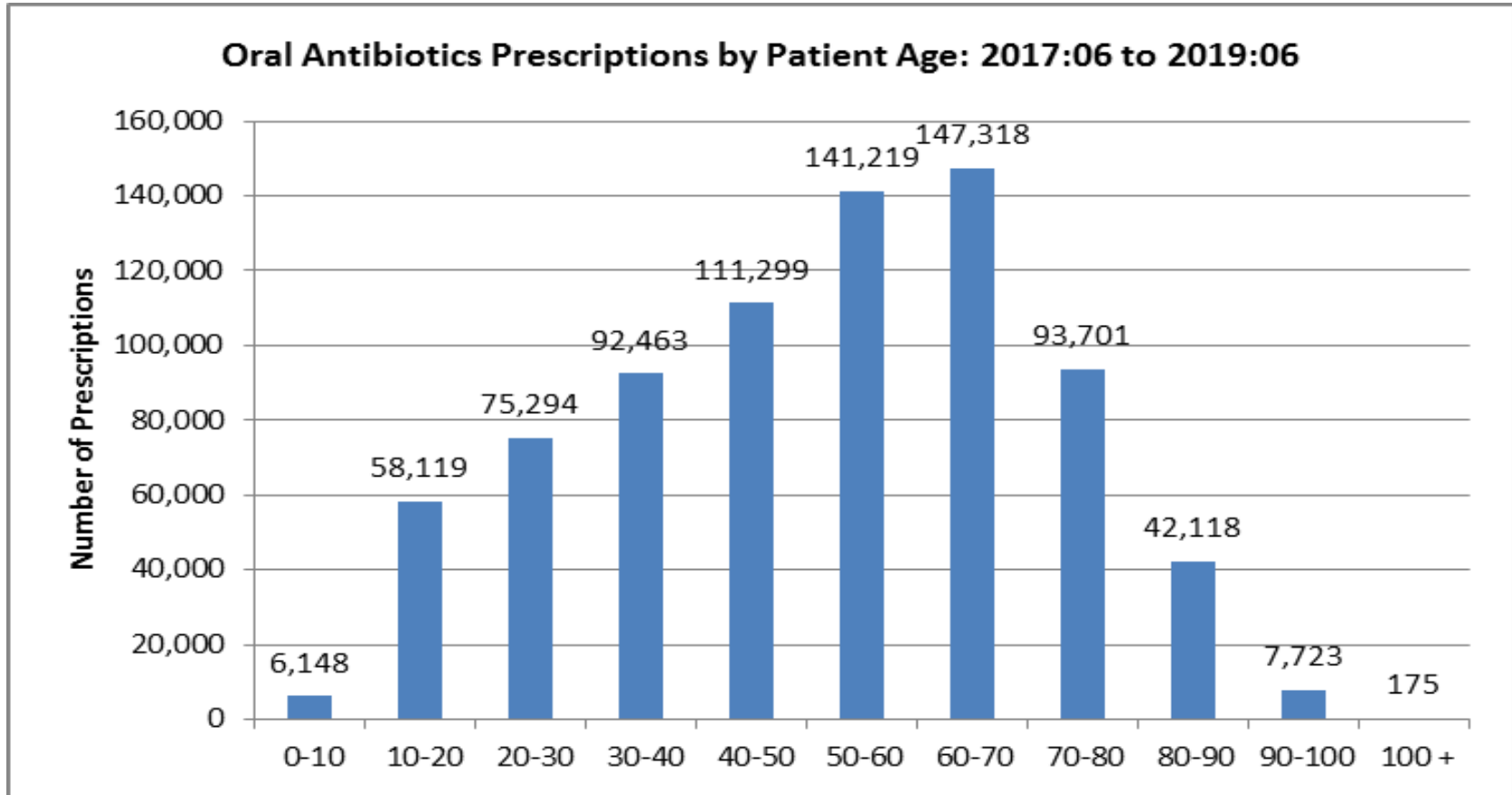
Age Cohorts by Gender, NL



Source: Compiled by the Community Accounts Unit, Department of Finance, Government of Newfoundland and Labrador based on information provided from the Census of Population 2016 Statistics Canada.

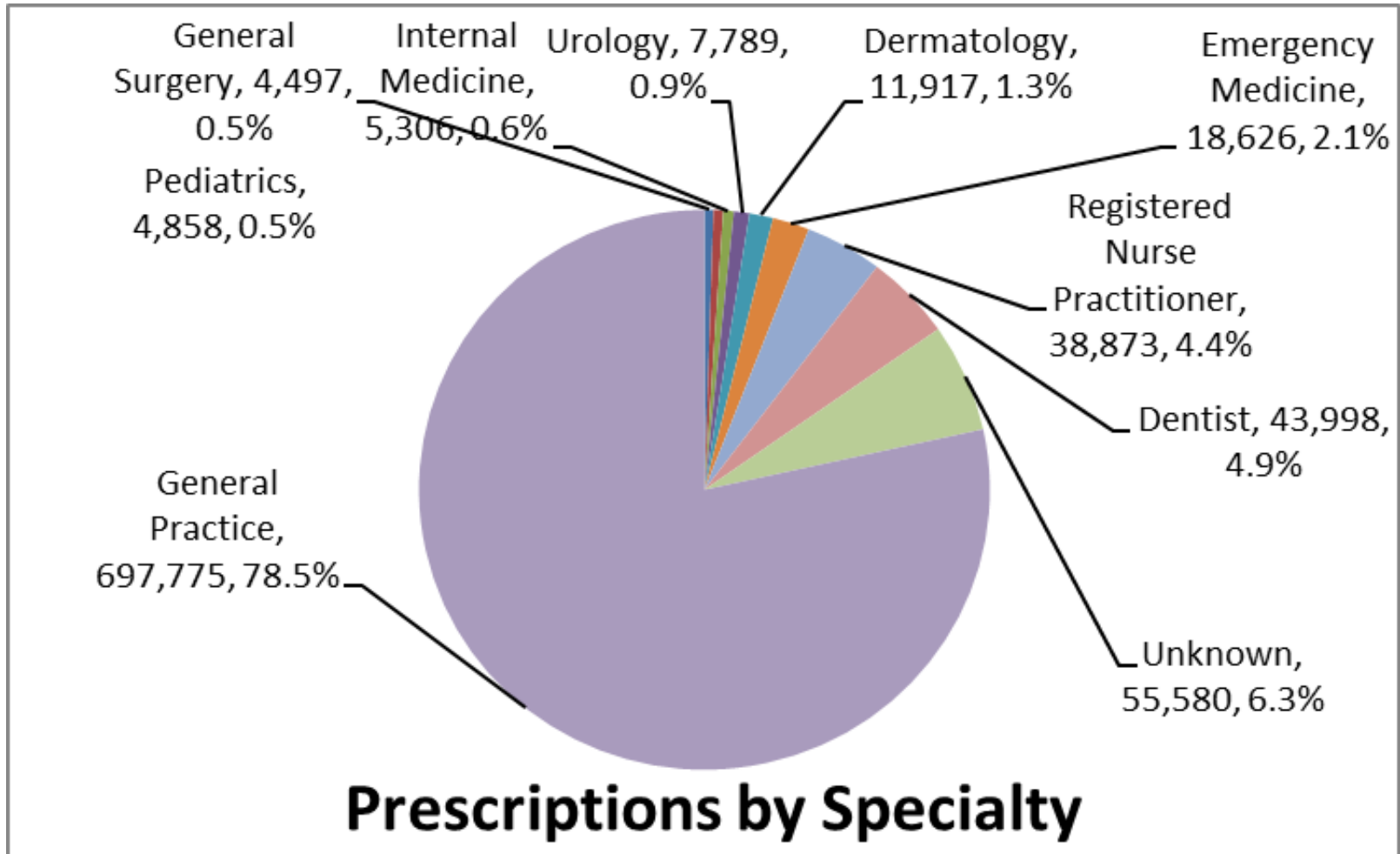
NL has an older population and it is getting smaller

Prescriptions by Age



The 50 years to 70 years cohorts happens to be the biggest in NL

Prescriptions by Specialty

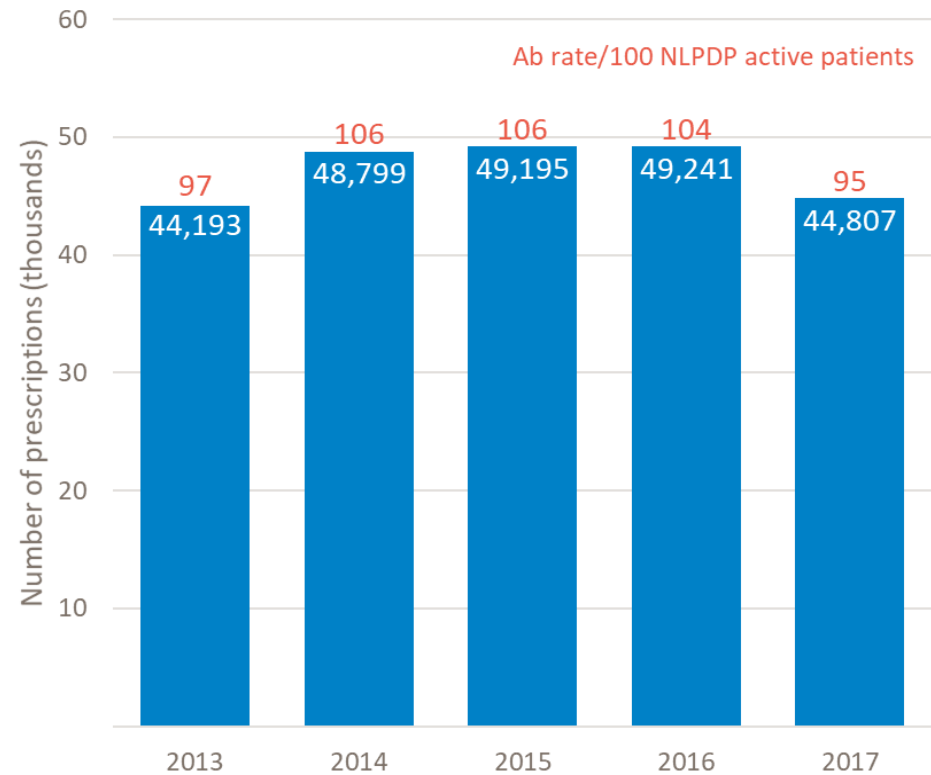
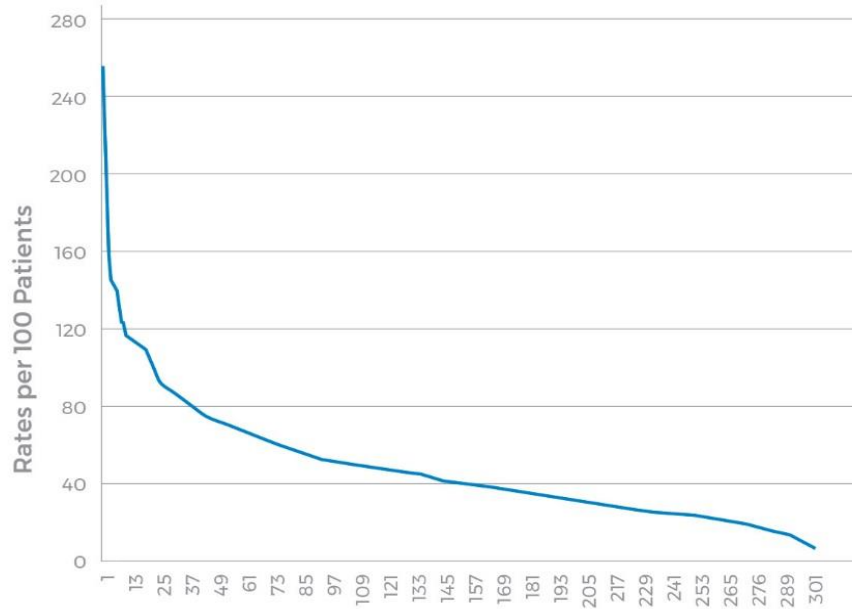


While education is important, you will have to touch the GPs and their patients to be effective

Economics and Antimicrobial Resistance

- **When Antibiotics Fail, The Expert Panel on the Potential Socio-Economic Impacts of Antimicrobial Resistance in Canada, 2019**
 - Antimicrobials are value, estimated that in 2018, they saved 17,000 lives, 2.6 million hospital days and \$6.1 billion in GDP
 - Overuse creates problems, resistance to antibiotics cost \$2.0 billion in GDP and with no changes, that will increase to \$13 billion per year by 2050
 - in 2018, AMR has cost the system \$1.4 billion, which is estimated to rise to \$6 billion per year by 2050 with no change in resistance
 - In 2018, AMR directly responsible for 5,400 deaths and resistant bacterial infections were responsible for 14,000 deaths in Canada
 - Apparent opioid-related deaths in 2017 was reported as 4,120 for Canada and 4,588 in 2018
 - This problem is more acute for the aged, in which NL leads the country and the share of which is expected to increased by 50% by 2030
 - NL has the highest overuse of antibiotics in the country (twice that of Quebec, for example)

Rate of Antibiotics Prescription by GP



Slide taken from Parfrey Nov 14, 2019: On improving the value of health care spending in NL

Despite improvements, there are significant outliers that need some explanation

Conclusion

- We at CARE want to acknowledge the important and crucial work that **Choosing Wisely NL** and **Quality of Care NL** are doing and we offer any support that we can in helping them be successful in their mission
- NL has a **fiscal problem** and it is **not easy to fix**
- We need to be more sophisticated in how we approach health care cost inflators, including over-use of antibiotics.
- Maybe more emphasis need to be placed on the **social determinants of health** and the realignment health infrastructure to **better match needs with capacity** on a **geographic dimension**
- We need a clear definition of **what your rights as citizens are** (eg., not having to drive 30 minutes to an emergency room afterhours, is that a right?)
- **Kicking the can down the road**, just leads to **more problems** down the road
 - Stronger and more expensive antibiotics needed to deal with AMR
- **Research and understand** – what are the significant drivers of value and that does not always mean cutting costs
- **Educate, Disseminate and Communicate** – share your findings in an effective manner with providers and patients
- **Moral Suasion** - go see the outliers (note: while our average is high, there are significant outliers even with that average. **A little guilt goes a long way**).
- **Creative and Smart Solutions** - Offer Packages of solutions where less effective services may be replaced with a more beneficial services (avoiding unnecessary antibiotic prescriptions, free up resources for more pressing needs – eg., long term care)
- **Recognize the economic realities** – health facilities are economic drivers of communities in which they operate and that has to be taken into account in any smart solution
- **Avoid the trade-off** of **quick, easy and cheap** in the short-term for **expensive, complicated and difficult** long-term problems