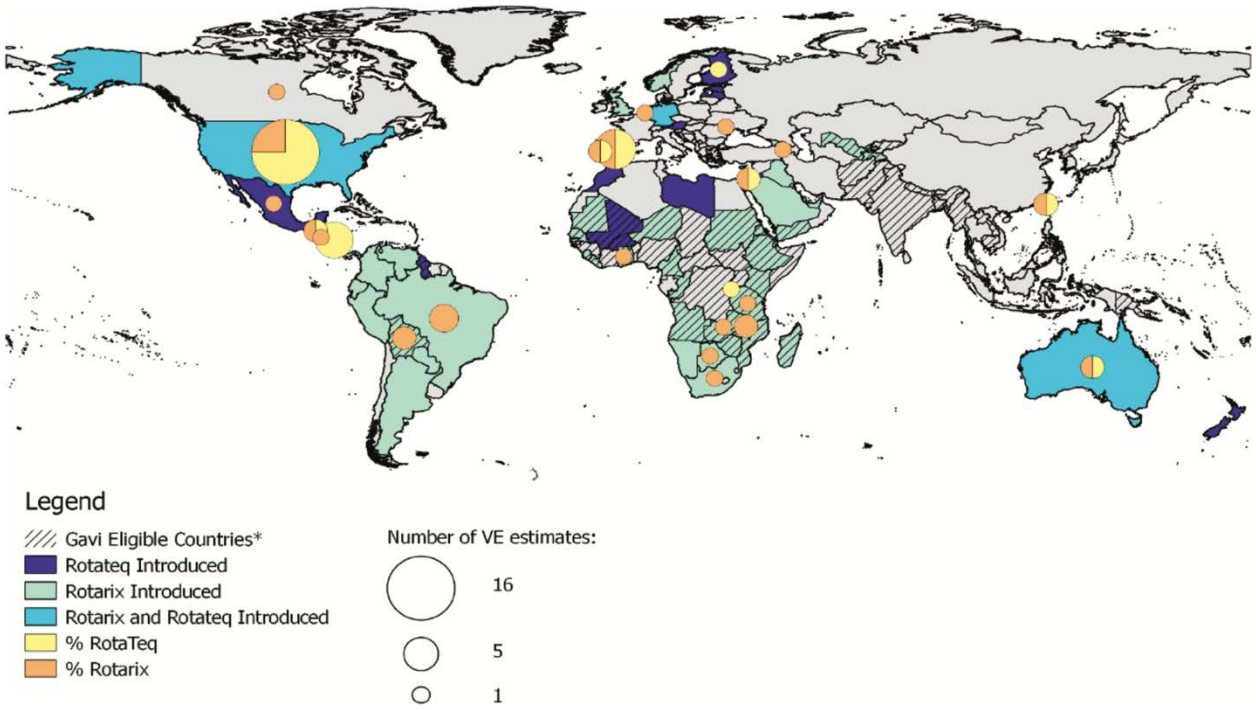
ROTAVIRUS VACCINE: IMPACT ON HOSPITALISATIONS AND LABORATORY IMPLICATIONS

Dr Gary McAuliffe
Microbiology Department, LabPLUS and Labtests, Auckland

Labtests

LabPLUS

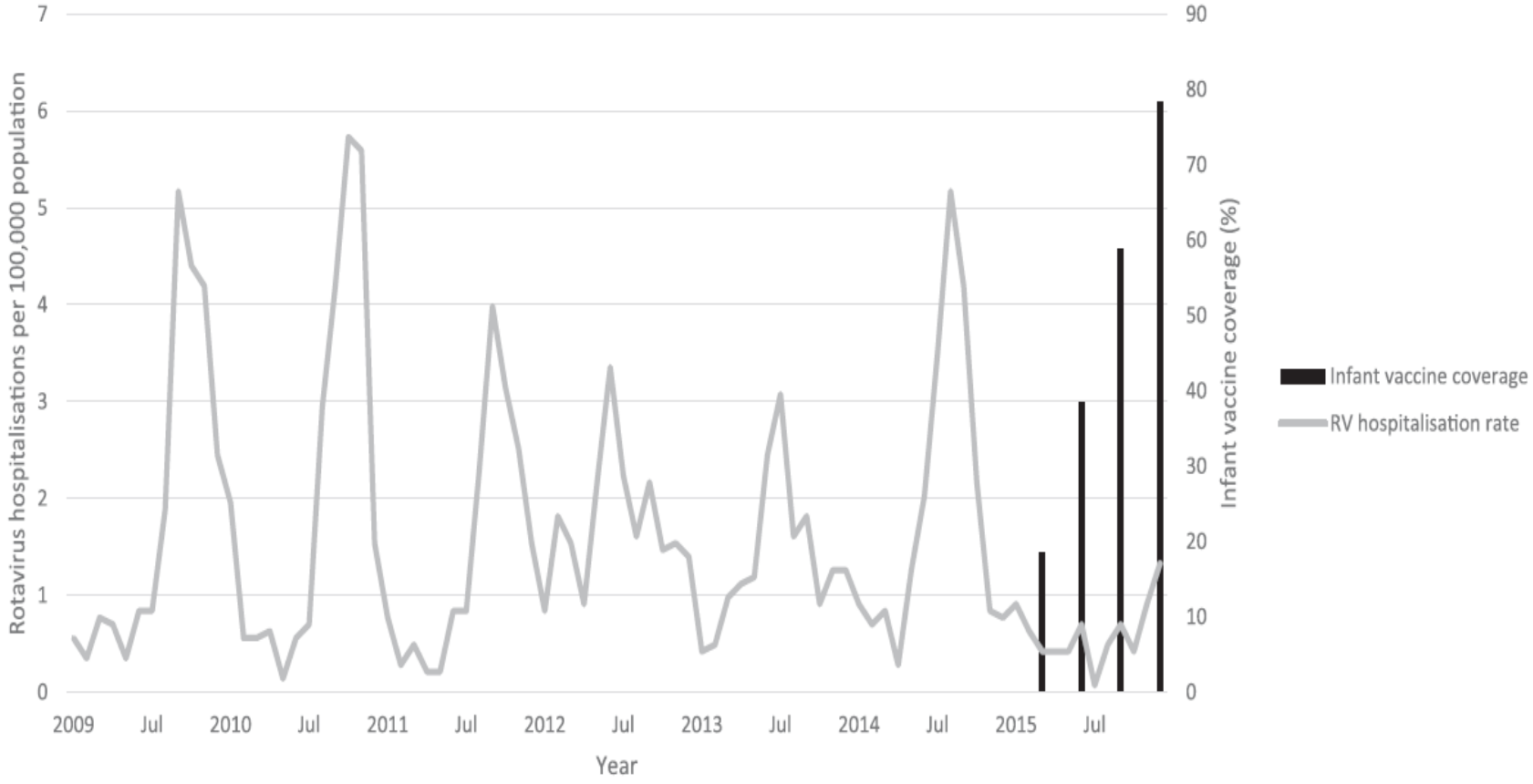
RV introduction status by country



From: Effectiveness of Rotavirus Vaccination: A Systematic Review of the First Decade of Global Postlicensure Data, 2006–2016

Clin Infect Dis. Published online April 21, 2017. doi:10.1093/cid/cix369

ROTAVIRUS HOSPITALISATIONS BY MONTH, AND VACCINE COVERAGE, AUCKLAND REGION, 2009-2015



RV AND AGE HOSPITALISATIONS IN AUCKLAND REGION 2009-2015

	Before vaccination	Post vaccine	
	2009-2013	2015	
Patient age (years)	Mean annual rate*	Rate	Relative risk (95% CI)
Rotavirus coded hospitalisations			
<1	523	120	0.23 (0.14- 0.35)
1	465	120	0.25 (0.15-0.39)
2	189	111	0.59 (0.35-0.98)
3	73	39	0.53 (0.22-1.25)
4	39	24	0.63 (0.20- 1.91)
<5	258	83	0.32 (0.25-0.41)
≥5	2	2	0.72 (0.41-1.26)
Total	20	7	0.36 (0.28-0.45)
All cause gastroenteritis hospitalisations			
<1	3768	2907	0.87 (0.81-0.92)
1	2940	1809	0.76 (0.70-0.83)
2	1231	824	0.8 (0.70-0.90)
3	669	475	0.83 (0.71-0.97)
4	456	431	0.97 (0.82-1.12)
<5	1815	1293	0.83 (0.80-0.86)
≥5	428	464	1.04 (1.02-1.06)
Total	527	523	1.0 (0.98-1.01)

% reduction <5yr olds

RV 68%

AGE 17%

CONFIRMATORY TESTING

In 2015 rotavirus the proportion of rotavirus tests that were positive in laboratories fell from 11-18% to 7% **(3% in 2016)**

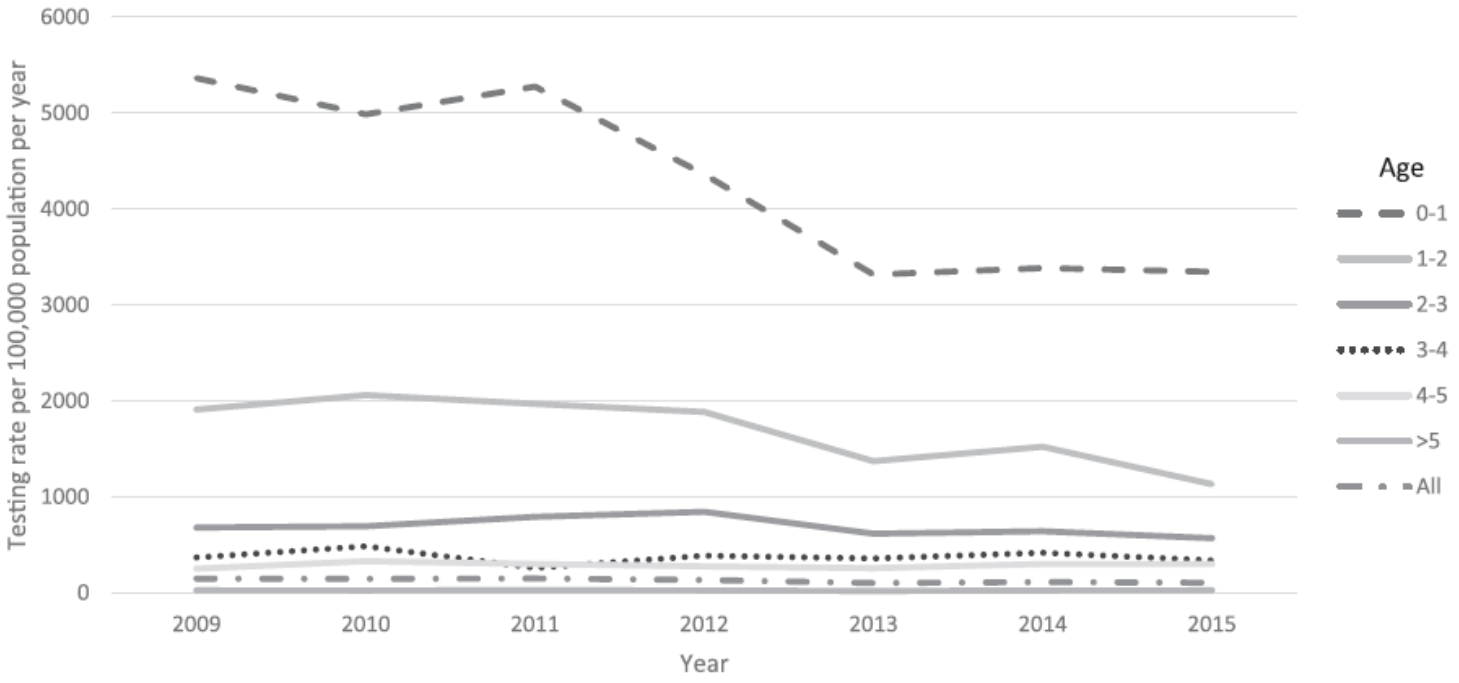
Labs noticed children with discordant results for rotavirus (positive by one test, negative by another)

Investigated by bringing in confirmation of all positives by a second test

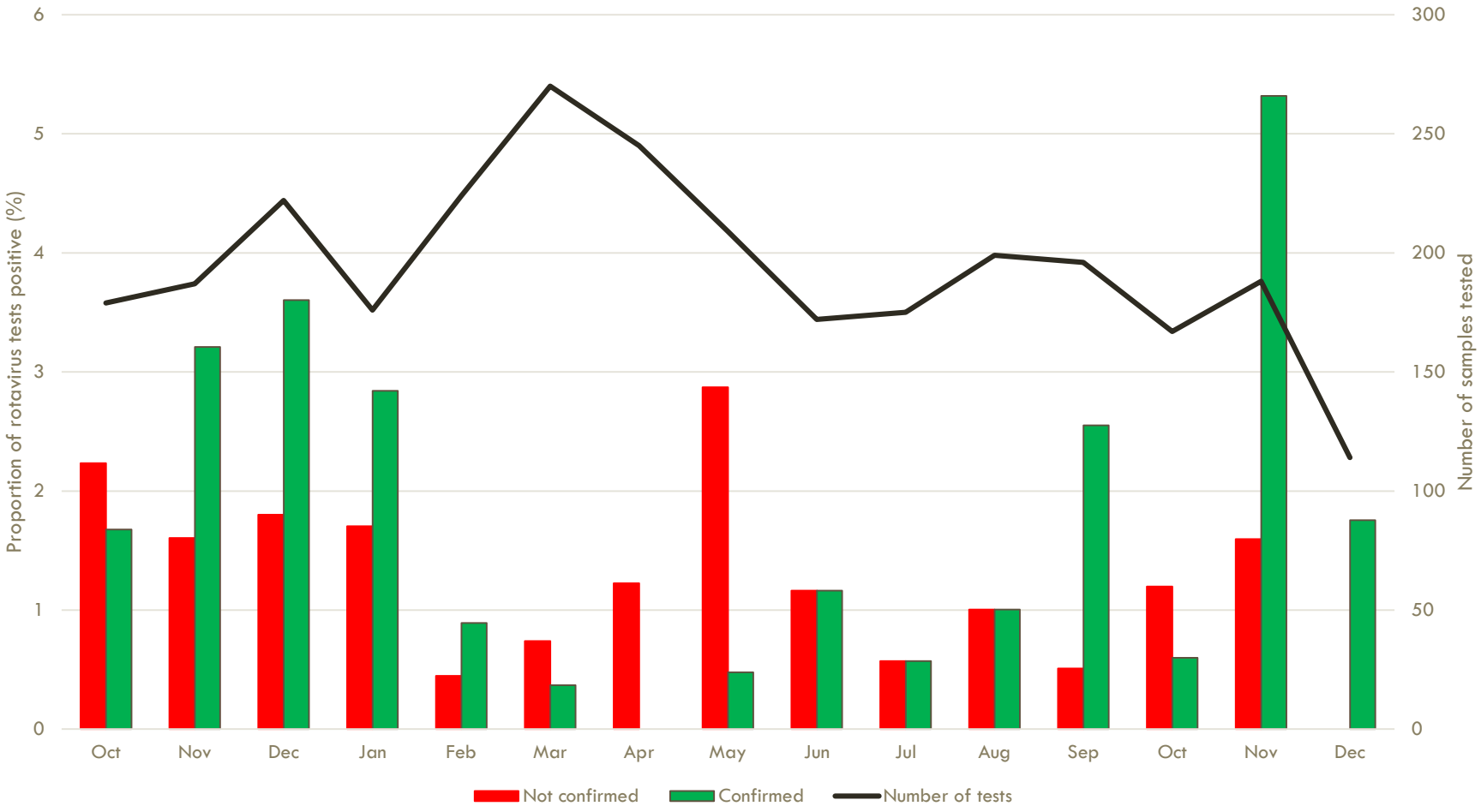
109 Rotavirus ICTs were positive; 58 had confirmatory PCR testing performed

19 (33%) were not confirmed

ROTAVIRUS TESTING RATES BY AGE GROUP, AUCKLAND REGION, 2009-2015



Auckland community samples tested by EIA for rotavirus, confirmed and unconfirmed 1/10/2015-31/12/2016



PPV varied between 15% in Autumn to 65% in Spring (54% overall)

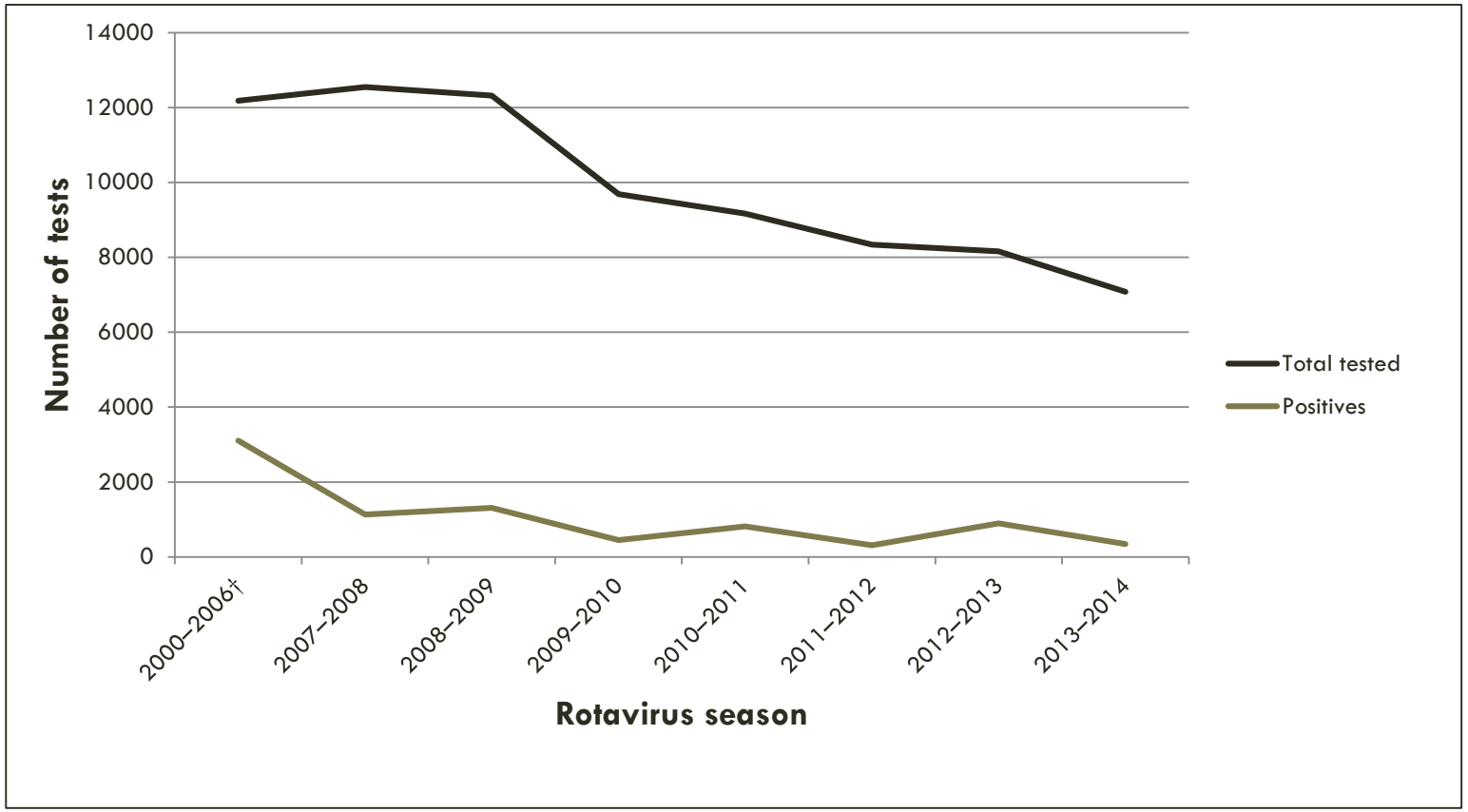
ELSEWHERE

NZ hospitals 2015	33% samples submitted for genotyping not confirmed
Australia 2012-2015	20-42% samples submitted for genotyping not confirmed

Implications for individuals: incorrect diagnosis, cohorting

Potential over-estimation of prevalence for surveillance

ANNUAL ROTAVIRUS TESTS 2000-2014, NREVSS, USA (ALIABADI, MMWR, 2015)



OPTIONS FOR IMPROVING PERFORMANCE

Change test? ☹

Confirmatory testing ☺

Improve pre-test variables ☺

Laboratory protocols, clinician requesting:

1. Reduce out of season testing
2. Don't test patients who don't have gastroenteritis
3. Focus on high risk groups where tests have most value e.g. severe infections, and those in immunocompromised

SUMMARY

Marked reduction in hospitalisations in Auckland region

Not met with an equal reduction in testing

Risk of false positive results

Diagnostic and surveillance implications

Help avoid by confirmatory testing and modification of pre-test factors

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