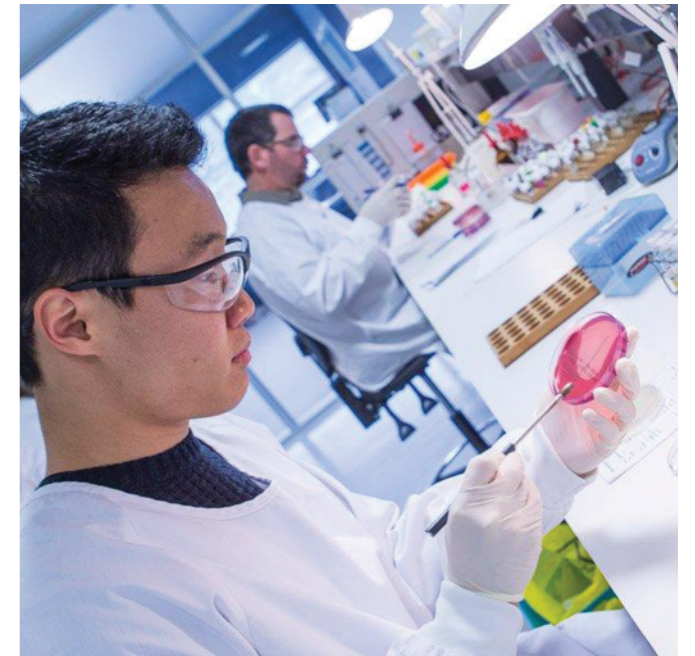


ESR's ID Capability and Surveillance Activities 2014

05/11/2014

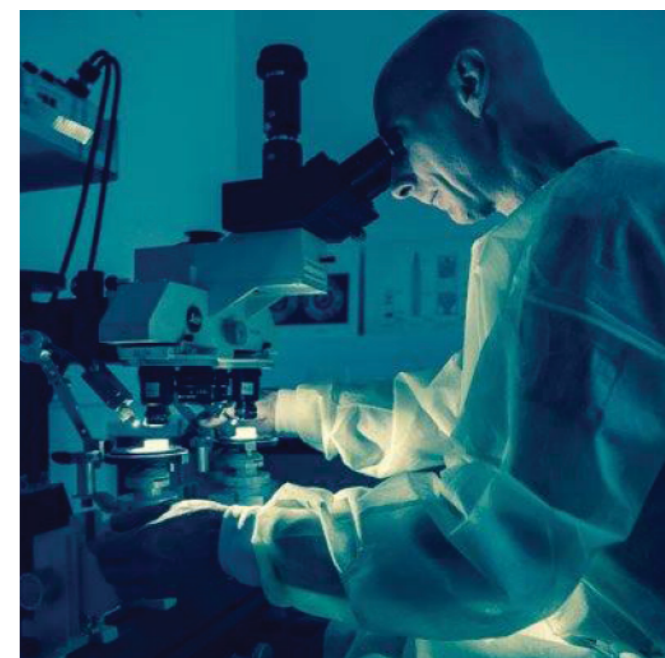
ESR

We use the power of science to help our partners and clients solve complex problems and protect people and products in New Zealand, and around the world.



ESR

It's our science that lies behind the decisions that safeguard people's health, protect our food-based economy, improve the safety of our freshwater and groundwater resources and provide the justice sector with expert forensic science.



ESR

ESR employs around 400 expert minds whose independent scientific advice and services help improve our collective economic and social wellbeing.



ESR – Health Science

ESR offers world class laboratory services and experience for the detection and identification of bacteria and viruses that cause infectious disease. We are the preferred supplier of scientific services to the Ministry of Health and also collaborate on research projects with organisations in New Zealand and around the world.



ESR – Food Science

ESR's expertise, relationships and track record stretches across every food production sector in New Zealand. We are the core food safety science provider to the Ministry for Primary Industries.



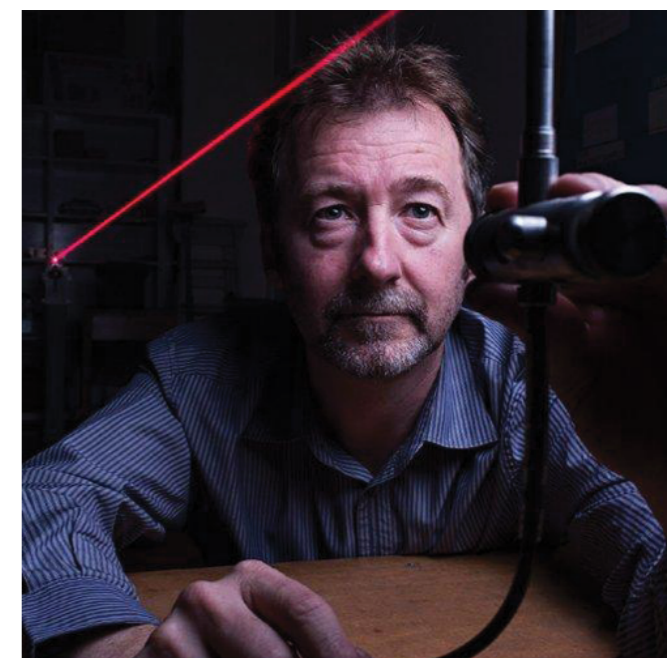
ESR – Forensic Science

As well as the analysis of human tissue, crime scene evidence, bodily samples and other evidential material, our comprehensive knowledge of the presence and interpretation of DNA is utilised across the country and around the world. We are the sole forensic science provider to the New Zealand Police.



ESR – Radiation Science

Our experts work across a wide range of sectors to provide expert advice, services and research on public, occupational and medical exposure to radiation, assessment of radiation equipment, and the measurement of radiation and radioactivity. We are the preferred supplier of radiological science services to the Ministry of Health.



ESR – Workplace Drug Testing

ESR's workplace drug and alcohol testing detects certain drugs, or their metabolites, in samples such as urine, oral fluid or hair. Our testing may indicate that an employee's ability to carry out their duties safely is compromised, presenting a danger both to the employee but also to work colleagues and the public.



ESR – Water Science

ESR aids and supports health authorities, local government and communities by supplying scientific advice and expertise on the management of drinking, recreational and wastewater. Our experts also work with other organisations in the Centre for Integrated Biowaste Research.

Our work includes the surveillance and reporting of drinking-water quality, scientific advice on health and environment public policy and information systems management.



Surveillance and Outbreak Management



Surveillance and outbreak management

► Inputs

- Direct electronic reporting from laboratories
- Hospital surveillance
- Primary care surveillance
- Health Line
- Research Data

► Outputs

- Outbreak detection – Early Aberration Reporting (EARS)
- Incidence and trend data
- Exposure factors, demographics
- Burden

Examples of outputs

www.surv.esr.cri.nz

- Weekly, monthly, quarterly and annual reports
- Notifiable Disease Report
- Reference Laboratory Surveillance Report
- Sexually Transmitted Infections Report
- Antimicrobial Resistance Report
- Influenza Report etc....



EpiSurv

- Secure, web based application for data entry and reporting
- Ability to have local and national views
- Ability to transfer cases
- Geocoding engine
- Fast national and local level reporting
- Real time
- No local installation required
- 20,000 notifications per year
- Supports Medical Officers of Health working in Public Health Units



Office
PHS

Case Summary

Case Name
 EpiSurv No.
 Disease
 Date Reported
 Onset Date
 NHI Number
 Case Status
 Invest. Status
 Invest. Method

Case Form Section Navigator

- Case Identification
- Case Demography
- Basis of Diagnosis
- STATUS*
- Clinical Course and Outcome
- Outbreak Details
- Risk Factors
- Source
- Comments*

CASE REPORT FORM

Legionellosis

EpiSurv No.

Reporting Authority

Name of Public Health Officer responsible for case

Notifier Identification

Reporting source* General Practitioner Hospital-based Practitioner Laboratory
 Self-notification Outbreak Investigation Other

Name of reporting source Organisation

Date reported* Contact phone

Usual GP Practice GP phone

GP/Practice address Number Street Suburb
 Town/City Post Code GeoCode

Case Identification

Name of case* Surname Given Name(s)

NHI number* Email

Current address* Number Street Suburb
 Town/City Post Code GeoCode

Phone (home) Phone (work) Phone (other)

Case Demography

Location TA* DHB*

Date of birth* OR Age Days Months Years

Early Aberration Reporting System

- ▶ For all 50 plus Notifiable diseases
- ▶ For each of 20 DHB's
- ▶ Timely statistical analysis to detect outbreaks
- ▶ Expert system to calculate and flag clusters in time compared with historical data

- Acquired Immunodeficiency Syndrome
- Acute gastroenteritis **
- Anthrax
- Arboviral diseases
- Brucellosis
- Campylobacteriosis
- Cholera
- Creutzfeldt-Jakob disease and other spongiform encephalopathies
- Cryptosporidiosis
- Diphtheria
- *Enterobacter sakazakii* invasive disease
- Giardiasis
- *Haemophilus influenzae* b
- Hepatitis (viral) – not otherwise specified
- Hepatitis A
- Hepatitis B
- Hepatitis C
- Highly Pathogenic Avian Influenza (HPAI)
- Hydatid disease
- Legionellosis
- Leprosy
- Leptospirosis
- Listeriosis
- Malaria
- Measles
- Meningoencephalitis – primary amoebic
- Mumps
- *Neisseria meningitidis* invasive disease
- Pertussis
- Plague
- Poliomyelitis
- Rabies
- Rheumatic fever
- Rickettsial diseases
- Rubella
- Salmonellosis
- Severe Acute Respiratory Syndrome (SARS)
- Shigellosis
- Tetanus
- Typhoid and paratyphoid fever
- Viral haemorrhagic fevers
- Yellow fever
- Yersiniosis



SITE CONTENTS

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Early Aberration Reporting System

Aberration Detection Reports

by Week (Flagged Data Only)	by Disease (Flagged Data Only)	by DHB (Flagged Data Only)	Trend Graphs (All Data)
Type	S. Typhimurium phage type 101	New Zealand	Graphic Index - by DHB
DHB	S. Typhimurium phage type 156	Northland	Graphic Index - by Type
	S. Brandenburg	Waitemata	
	S. Mississippi	Auckland	
	S. Saintpaul	Counties Manukau	
	S. Typhimurium phage type 23	Waikato	
	S. Typhimurium phage type RDNC- May 06	Tairāwhiti	
	S. Typhimurium phage type 1	Whanganui	
	S. Typhimurium phage type 160	MidCentral	
	S. Infantis	Capital and Coast	
		Wairarapa	
		Nelson-Marlborough	

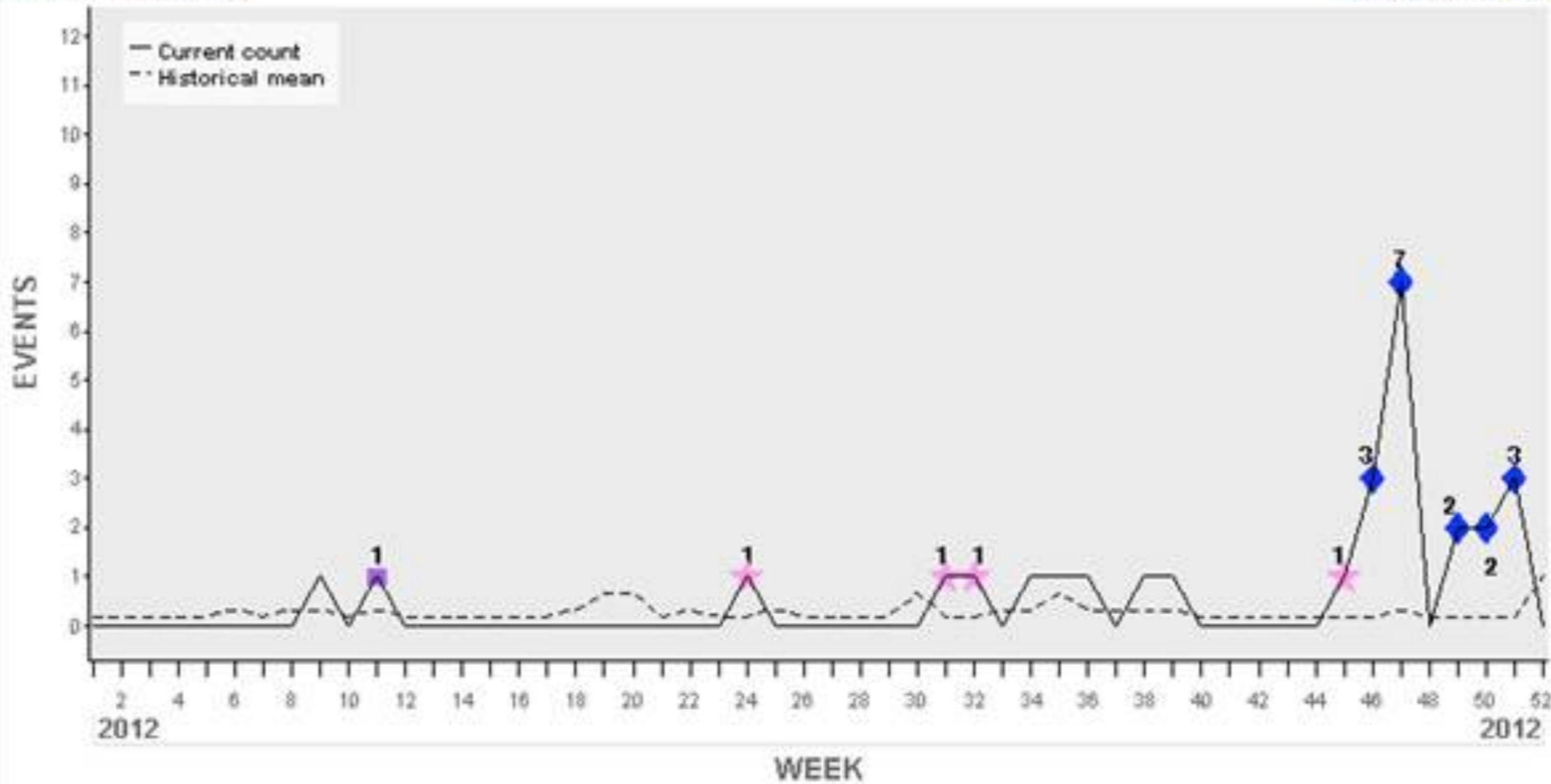


Early Aberration Reporting System

S. Montevideo

ESR: New Zealand

Ending Week 52



ABERRATION DETECTION FLAGS

- ★ CUSUM
- ◆ CUSUM+HL
- Historical Limits
- Manual Flag

S Montevideo events

- ▶ ESR Enteric Reference Laboratory notifies a cluster of *Salmonella* Montevideo isolates Nov 2012.
- ▶ We contacted affected Public Health Units (PHU's) for risk factor information collected to date.
- ▶ Pulsed field gel electrophoresis was performed on 9/11 cases. Seven cases an indistinguishable profile.
- ▶ Three cases from Tauranga ate at the same food premises and became ill 2-3 days later.

Investigation

- Interview cases with questionnaire
- 8/11 cases ate at kebab restaurants
- Food handlers and products tested
- Traceback to a tahini consignment imported into NZ
- Salmonella isolated from Gesas tahini from Tauranga restaurant and unopened tubs at wholesalers



Outcome

**Commercial hold on
product placed early on**

**Consumer-level recall (17
Dec 2012)**

**No further cases, No
deaths**

Hospital based Surveillance Severe Acute Respiratory Infection (SARI) Surveillance



SHIVERS

9 objectives of SHIVERS

- Understand severe respiratory diseases
- Assess influenza vaccine effectiveness
- Investigate interaction between influenza & other pathogens
- Understand causes of respiratory mortality
- Understand non-severe respiratory diseases
- Estimate influenza infection via serosurvey
- Identify & quantify risk factors for getting influenza
- Assess immune response in severe and mild influenza cases
- Estimate healthcare, societal economic burden caused by influenza and vaccine cost-effectiveness



SHIVERS



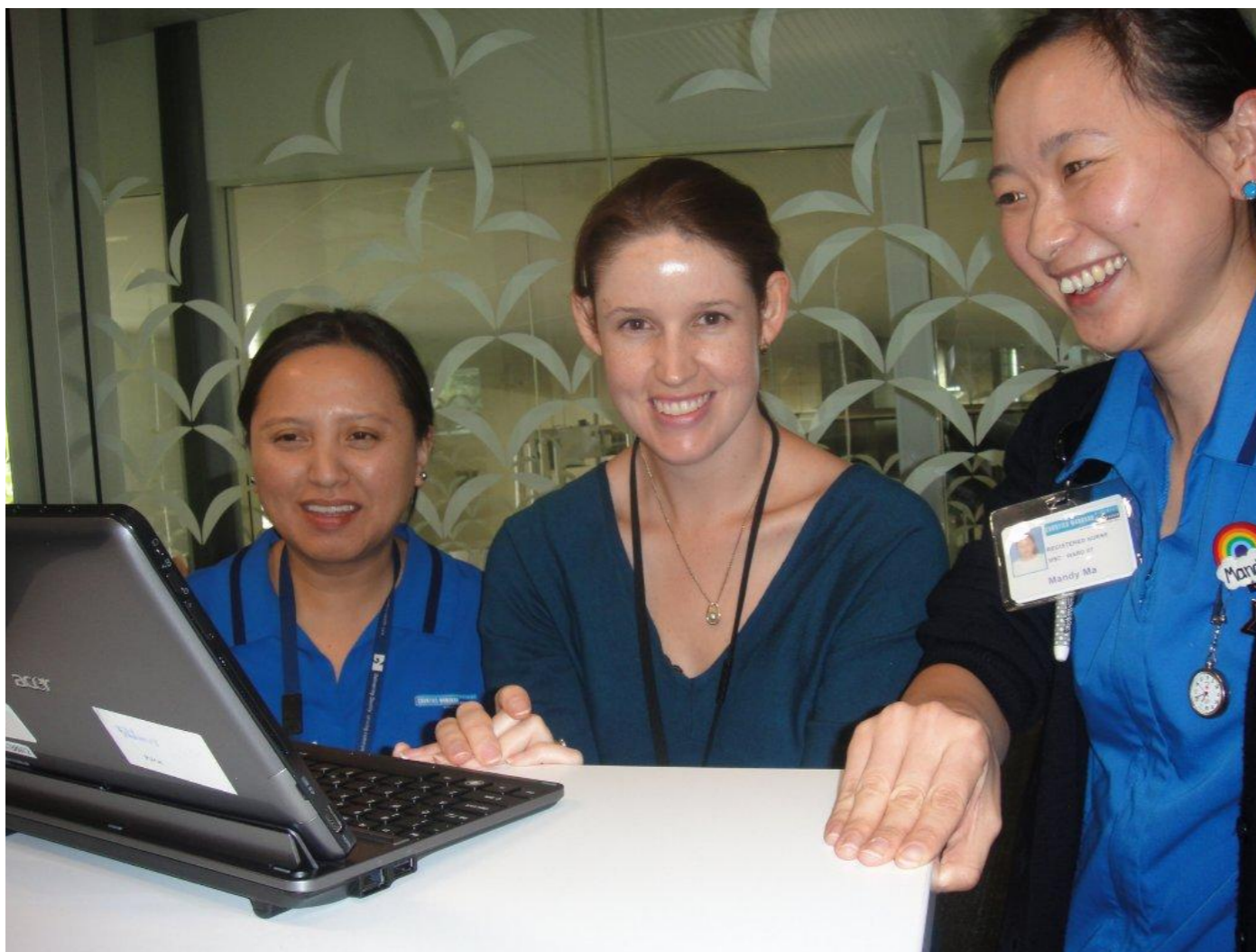
Auckland

- Population size: 837,696
- Gateway to NZ
- Wide spectrum of socioeconomic and ethnic subpopulations

SHIVERS

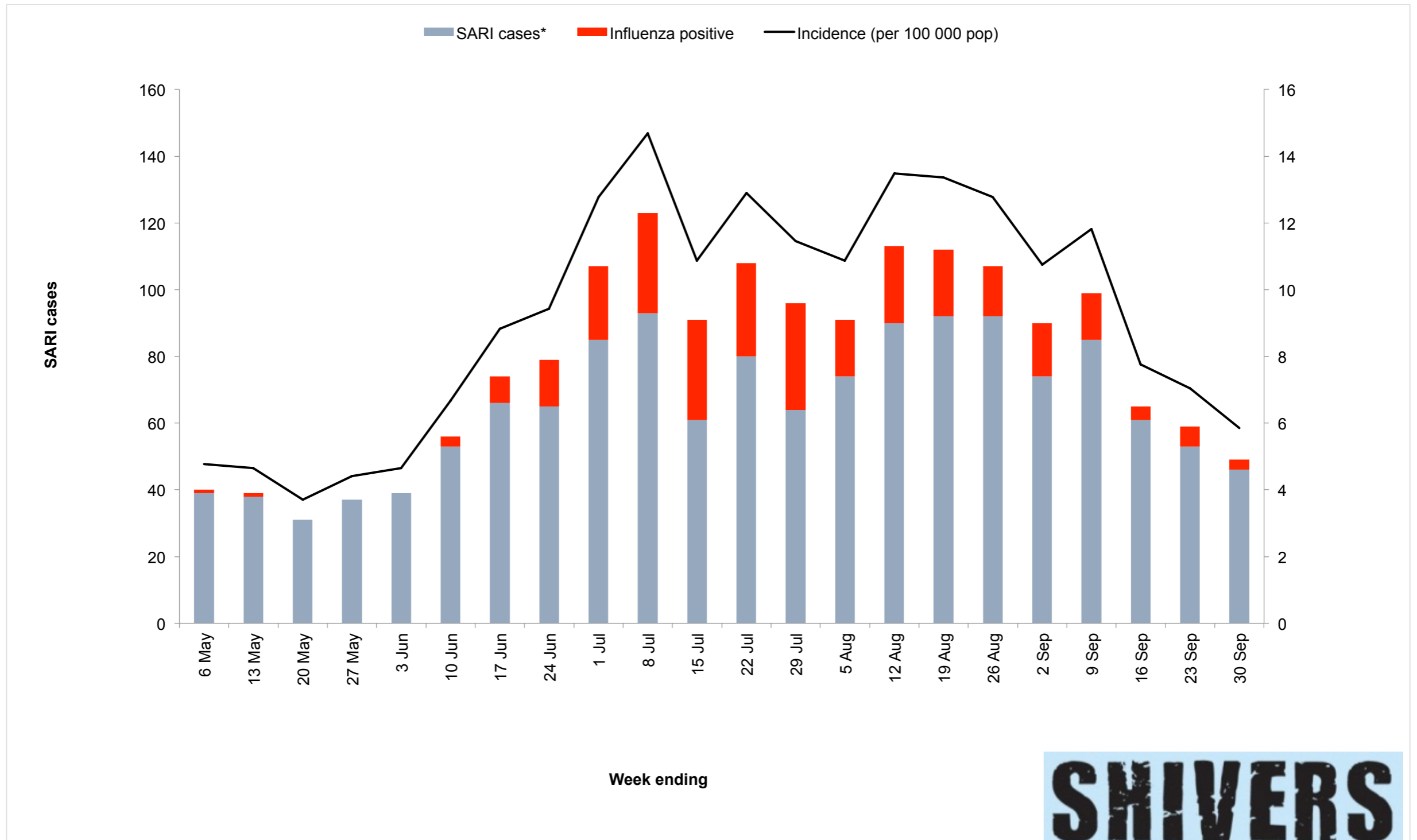
WHO case definition for Severe Acute Respiratory Infection (SARI)

- ▶ For all age groups:
- ▶ An acute respiratory illness with:
 - ▶ A history of fever or measured fever of $\geq 38^{\circ}\text{C}$, AND
 - ▶ Cough, AND
 - ▶ Onset within the past 7 days, AND
 - ▶ Requiring inpatient hospitalisation



SHIVERS

Weekly SARI & Influenza incidence



SHIVERS

Acknowledgements to Graham Mackareth and Sue Huang

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