

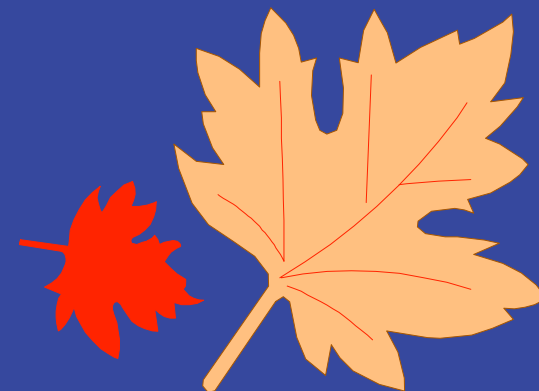
The SARS Experience in Ontario, Canada

Presentation to the Campbell Commission

- *Dr. Colin D’Cunha*
- *Commissioner of Public Health, Chief Medical Officer of Health and Assistant Deputy Minister*
- *Ontario Ministry of Health and Long-Term Care*

Presentation Outline

- The spread of SARS in Ontario
- Demographics of infected patients
- Incubation period
- Hospitalization and case fatality rates
- Quarantine data
- Multi-level Response: management, infection control, communication
- Next Steps



SARS: Evolving Knowledge

	Initial State	Current State
Origin	Unknown	Animal species
Symptoms	Uncertain	Well understood
Laboratory Test	Non-existent	Test only available for confirmation
Transmission	Unknown	Droplets & contacts
Protective Measures	Unknown	Well defined
Incubation Period	Unknown	About 10 days
Treatment	Unknown	Empirical
Vaccine	Unavailable	Unavailable
Long-term Effect	Unknown	Unknown

Onset of SARS Outbreak in Ontario



Outbreak Control Measures

March 14

1

- Isolation and contact follow up measures recommended

March 25

2

- SARS becomes reportable, virulent, communicable disease

March 28

3

- Directives for contact, droplet, airborne precautions instituted province-wide

4

- Suspension of admissions, and emergency and non-urgent services at index hospital
- Hospital closed to new patients and visitors
- Contact follow-up initiated

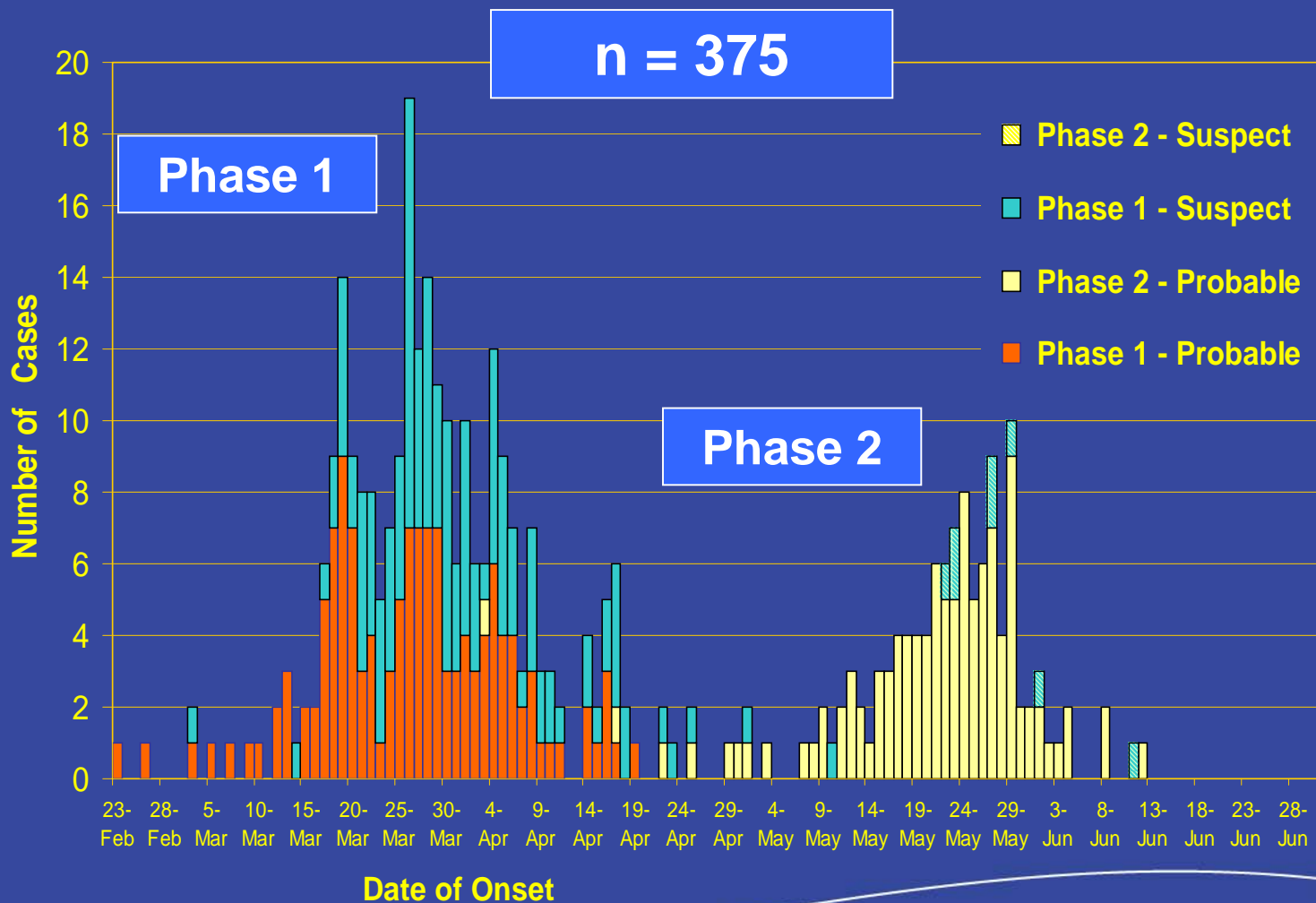
Definition of a Probable SARS Case

A person presenting with:

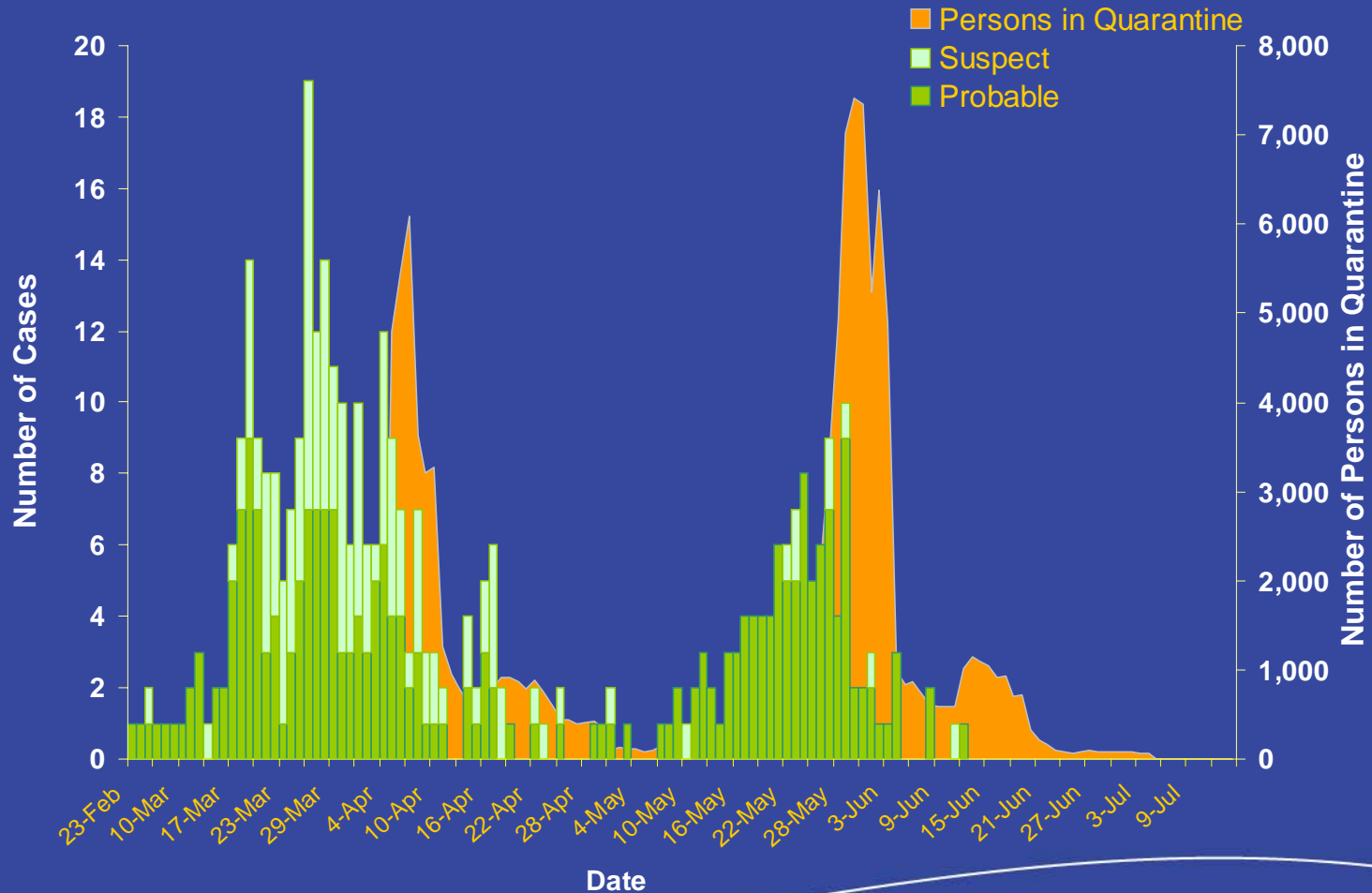
- Fever (over 38⁰ Celsius)
- Cough or breathing difficulty
- Radiographic evidence of infiltrates on chest x-ray*
- One or more of the following exposures during the ten days prior to the onset of symptoms:
 - Close contact with a probable or suspect case
 - Travel abroad to an area with recent SARS transmission
 - Recent travel or visit to an identified Canadian setting where SARS exposure may have occurred

* after May 29, 2003

SARS Cases in Ontario by Case Status and Phase



SARS Cases and Persons under Quarantine



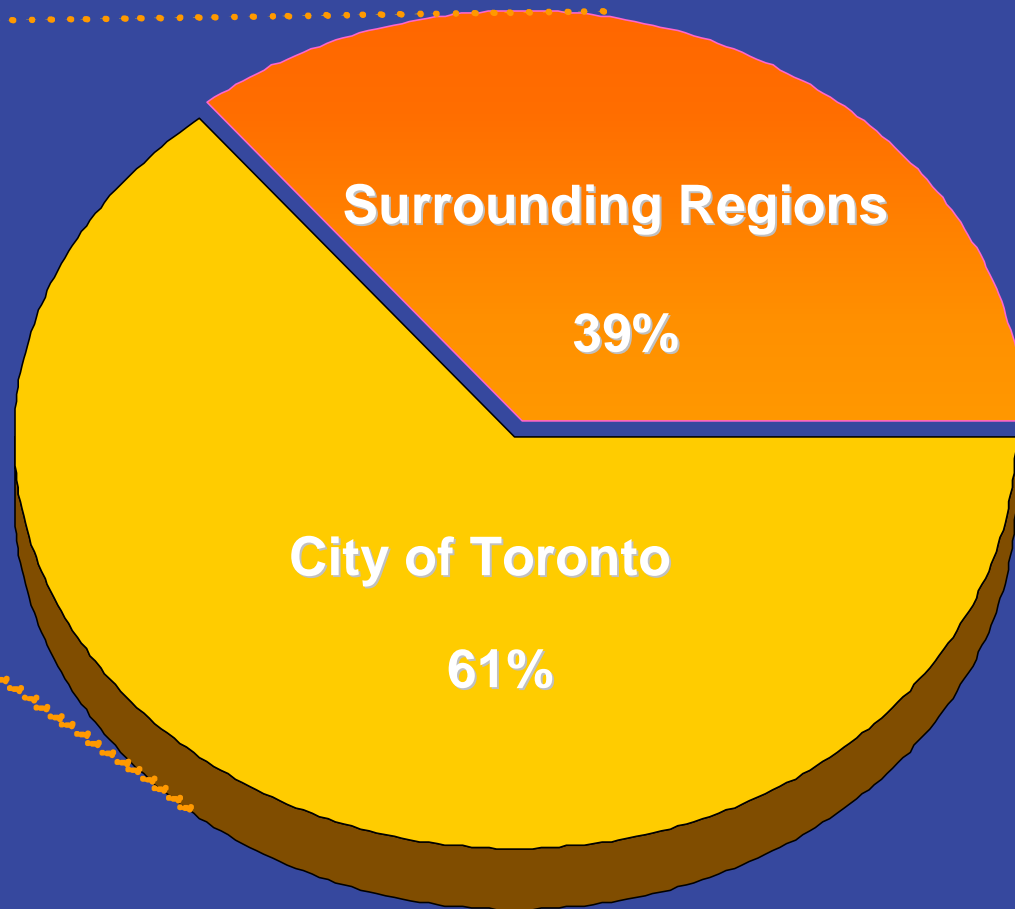
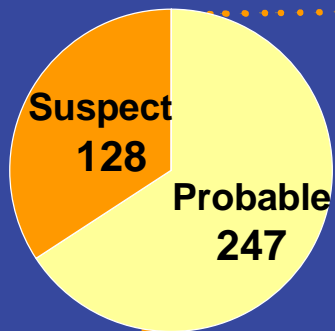
Quarantine Orders Issued During the Outbreak

Breakdown by HU and Order Type

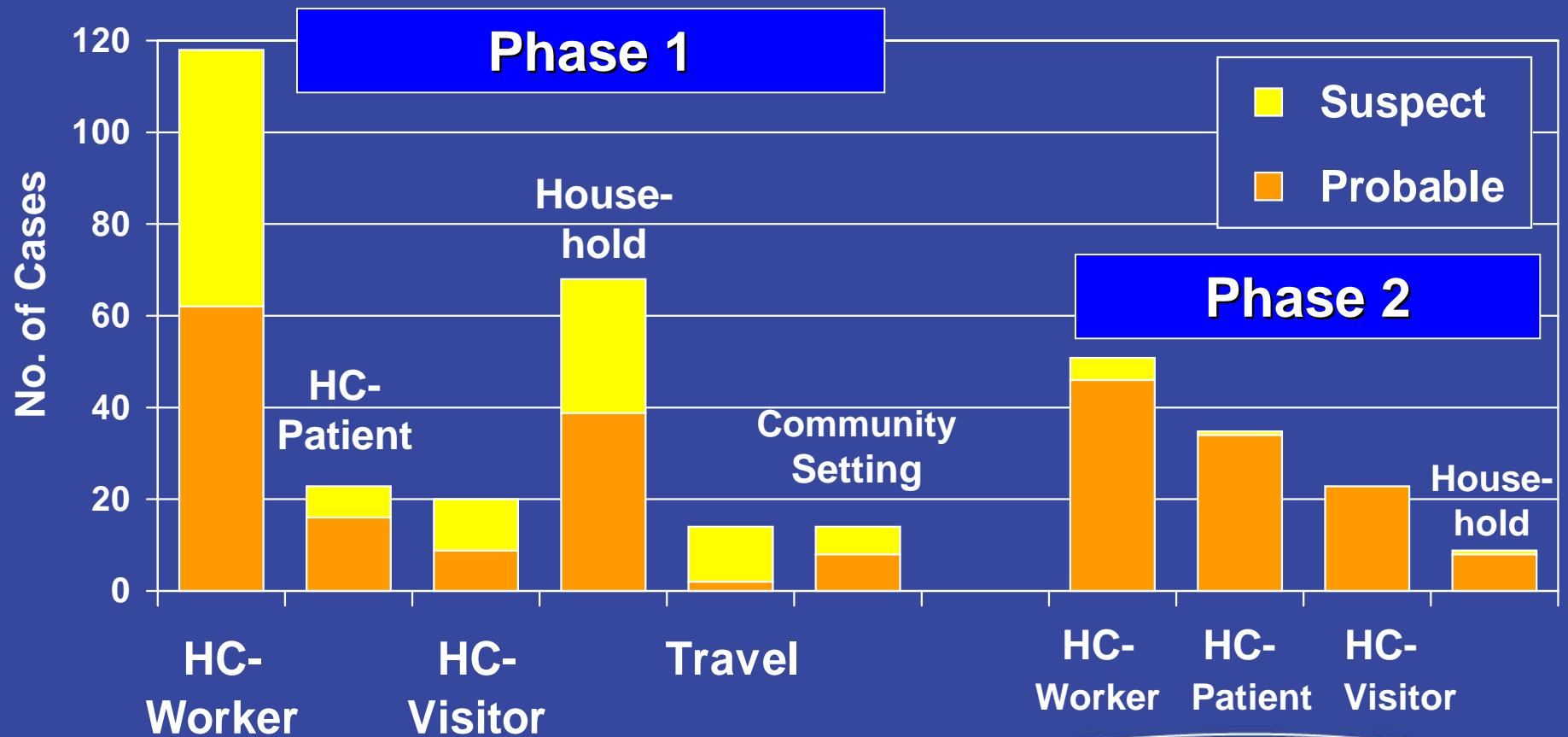


Health Unit	S. 22	S. 35
Toronto	27	
York	20	1
Durham	11	
Wellington	4	
Simcoe	2	
Halton	1	
Total	65	1

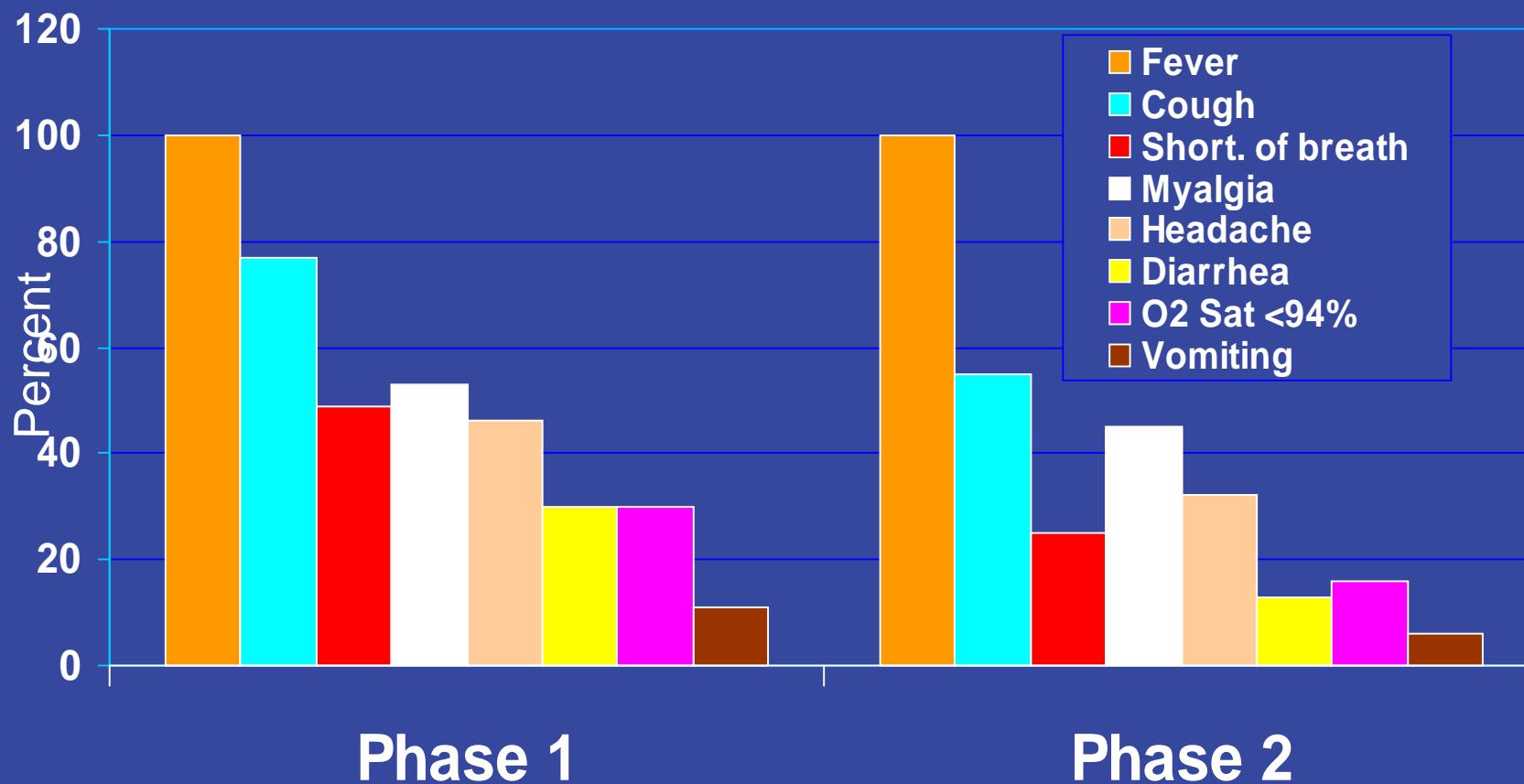
SARS Cases Reported by Health Units



Epidemiological Link by Contact Type

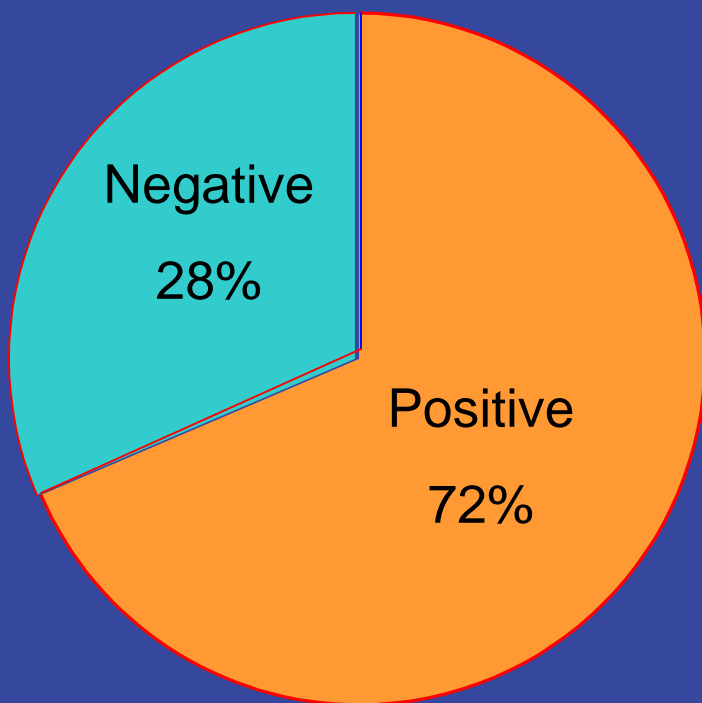


Prevalence of Clinical Symptoms

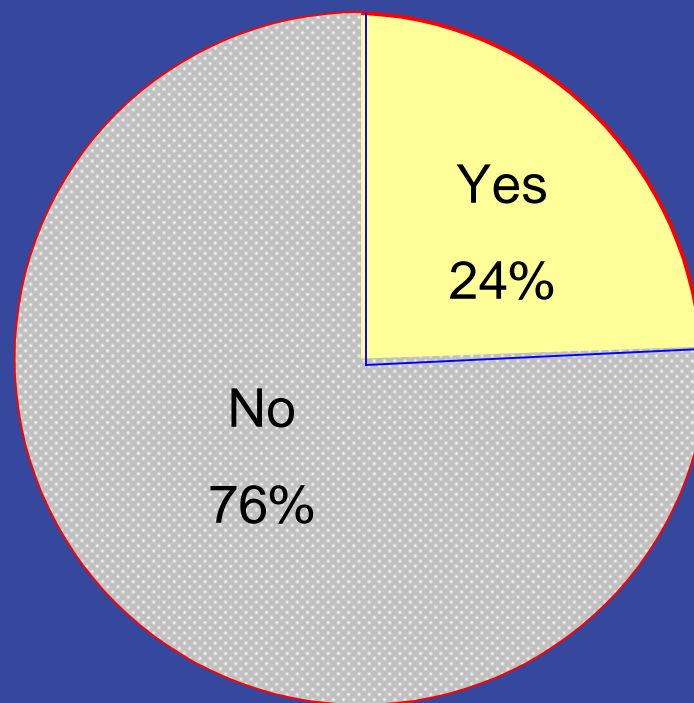


Diagnosis and Intervention

Probable and Suspect Cases



Chest X-Ray Infiltration



Patient Intubation

Case Distribution by Sex

Probable and Suspect SARS Cases

Sex	Phase 1		Phase 2	
	N	%	N	%
Male	90	35	41	35
Female	167	65	77	65
Total	257	100	118	100

Age Distribution of Cases by Sex

Probable and Suspect SARS Cases

Sex	Phase 1			Phase 2		
	Mean	Median	Range	Mean	Median	Range
Male	44.6	42	2-89	54.3	56	16-98
Female	43.3	42	1-99	49.5	49	11-90
Total	43.7	42	1-99	51.2	50	11-98

Case Distribution by Age Group

Probable and Suspect SARS Cases

Age Group [years]	Phase 1		Phase 2	
	N	%	N	%
< 18	18	7	2	2
18 – 35	71	28	20	17
36 – 64	132	51	70	59
65 +	36	14	26	22
Total	257	100	118	100

Incubation Period by Sex

Probable and Suspect

Phase	Sex	Days from Exposure to Onset	
		Mean	Median
Phase 1	Male	8.2	8
	Female	7.4	7
Phase 2	Male	7.1	6
	Female	6.3	5
Ph. 1 & 2	Both	7.1	6

Incubation Period by Age Group

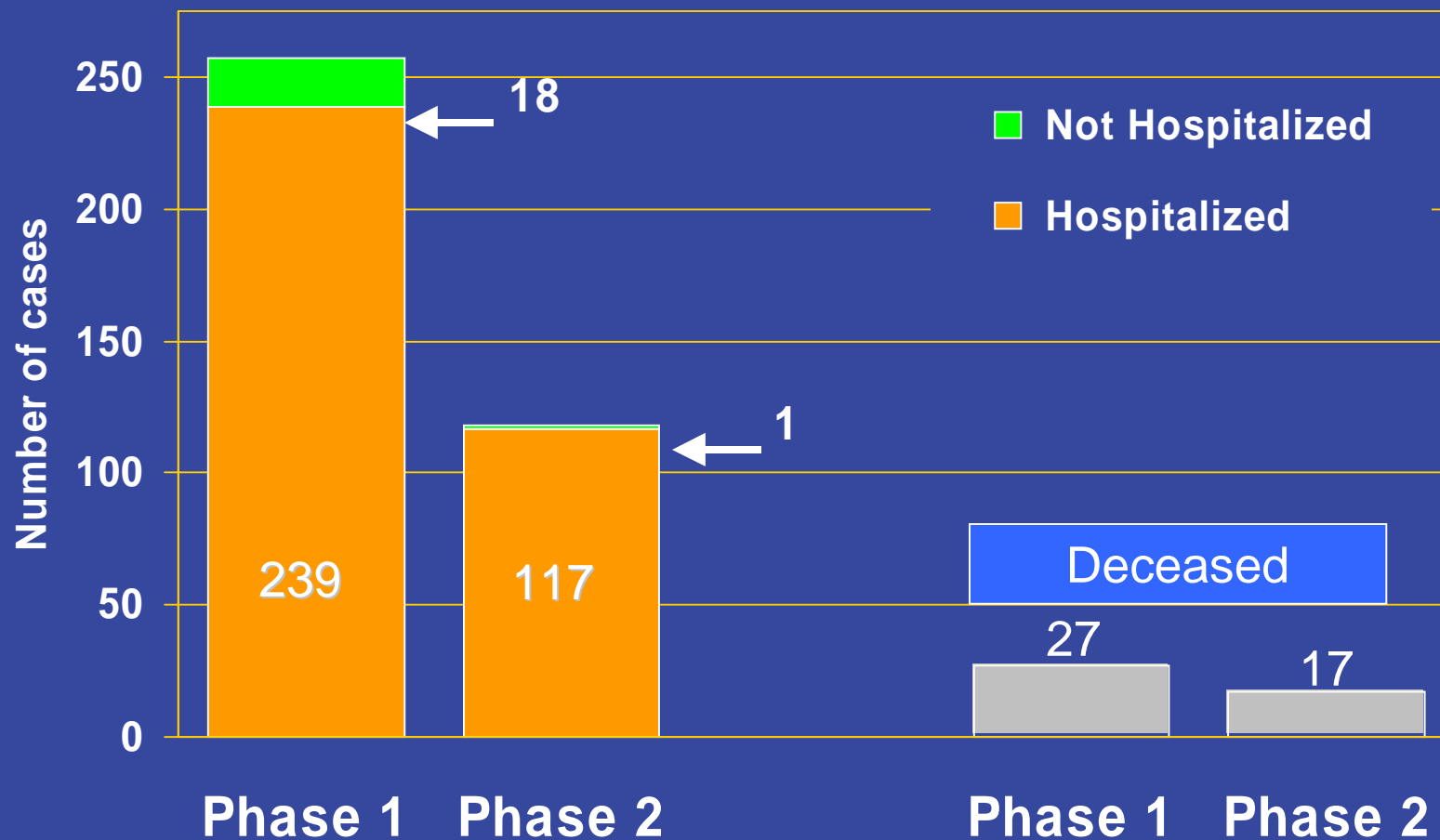
Probable and Suspect

Age Group [years]	Mean Incubation Period [Days]			
	Phase 1		Phase 2	
	Males	Females	Males	Females
< 18	14.5*	7.4	8.6	7.6
18 – 35	8.3	7.4	7.1	6.3
36 – 64	8.3	7.2	6.8	6.0
65 +	7.6	8.5	9.3	8.1
All	8.2	7.4	7.1	6.3

* Sample size consists of two cases

Hospitalization and Case Fatality Data

Probable and Suspect SARS Cases



Case Fatality by Age Groups

at the end of Phase 2, Probable SARS Cases

Age Group [Years]	Phase 1		Phase 2		Phase 1 & 2	
	N	%	N	%	N	%
< 18	0	0	0	0	0	0
18 – 35	0	0	0	0	0	0
36 – 64	10	38	6	31	16	37
65 +	16	62	11	69	27	63
Total	26	100	17	100	43	100

Case Fatality by Contact Sub-Groups at the end of Phase 2, Probable SARS Cases

	Phase 1		Phase 2	
Case Fatality Rate →	19.1%		15.3%	
↓ Contact Type	Deaths	%	Deaths	%
Healthcare Setting: Patient	12	46	13	76
Visitor	2	8	3	18
Worker	2	8	1	6
Household	8	31	0	0
Community Setting	1	4	0	0
Travel	1	4	0	0
Total	26	100	17	100

Comparative Case Fatality Rates

Probable SARS Cases (as at July 11/03)

Country/Province	Cases [A]	Deaths [B]	Case Fatality Rate ¹
Ontario – Phase 1	136	25	18.4%
Phase 2	111	16	14.4%
China ²	5,327	348	6.5%
Hong Kong ²	1,755	298	17.0%
Taiwan ²	671	84	12.5%
Singapore ²	206	32	15.5%
United States ²	75	0	0%

¹ [B] divided by [A]

² Source: WHO (Jul. 11/03)

Initial Actions

Feb. 19

- **Ministry alerts healthcare providers**
- **Index hospital closed**
- **SARS becomes reportable disease**
- **Quarantine** measures instituted
- **Provincial emergency** declared
- **Directives** for contact, droplet, airborne precautions instituted provincially

March 28



Response by the Ontario Government

- **Provincial Operations Committee**
- Provincial **directives** to hospitals and health units
- Coordination of **resources**
- Daily **media** conferences and reports

Outbreak Management by Public Health Division

- Set up **SARS** teams
- **Conferences** to discuss cases
- Routine **dissemination of information** (daily reports)
- Developed policies & directives through **Science Committee**
- Dedicated **space, staff, communication** lines
- Hired / seconded / borrowed **staff** on short-term contracts

Infection Control in Hospitals

- Enhanced infection control measures throughout the hospitals
- Creation of contained SARS wards
- New directives for patient transfers and visitors
- Work quarantine for selected healthcare staff
- Limiting the number of healthcare settings in which staff can work
- Curtailing other health services

Enhanced Infection Control Measures in Hospitals



- Wearing of **personal protective equipment** (masks, gowns, eye-gear, gloves)
- **Screening** patients at all points of entry
 - Temperature check on arrival
 - Completion of form indicating symptom and travel information
 - Outpatients positioned more than one metre (3 feet) apart
- Phone-screening for outpatients prior to appointment
- Banning all **visitors** (except on compassionate grounds)

Infection Control Guidelines



- **Airborne Precautions**

- N95 respirator or equivalent
- Negative pressure isolation rooms where available
- Hand-washing

- **Droplet and Contact Precautions**

- Gloves, gowns, eye protection (i.e., goggles, face shield)
- Hand-washing

- **Minimize number of people in room during high risk procedures**

Planning for the Future

- Ongoing **epidemiology centre**, heightened surveillance
- **Epi Investigation and PH Policy** capacity
- Ongoing **Public Health Call Centre** with 24/7 coverage
- **Mobile Response Teams** to assist Health Units in time of outbreaks
- Additional Public Health **field staff**
- Strengthened **laboratory capacity**
- Public **education**

Fever and Respiratory Illness (FRI) Surveillance

- active surveillance, builds on current ER & admission assessment
- Looks for febrile respiratory illness, esp. pneumonia
- has not been issued
- supports current IC practices
- all acute care hospitals in Ontario
 - but pediatric and cancer facilities/units
- objectives
 - maintain high level of vigilance
 - establish baseline
 - early identification of
 - early warning system

FRI - Criteria for Success

- Cases of FRI are managed with respiratory and contact precautions
- potential SARS cases detected on admission
- audit and compliance indicators met
- reporting requirements are met
- no SARS exposure or transmission
- FRI rates established
- early detection of and successful rapid intervention for other respiratory infection outbreaks