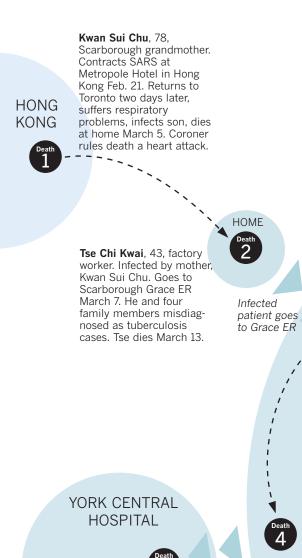
Tracking Toronto's SARS deaths

The chart shows the known links that led to the spread of SARS in Toronto, causing 44 deaths and 375 infections in two waves. The disease was spread mainly by close contact with an infected person.



Joseph Pollack, 76, retired fabric salesman. Heart patient beside Tse in Grace ER on March 7. Gets sick, returns to ER the next week but is sent home. Grace doctors and Toronto Public Health do not realize he has SARS until it is too late. Family observes lax, often no infection control precautions at Grace. Dies March 21.

Infected

James Dougherty, 77,

ER on March 7, being

treated for heart and

Also beside Kwai in Grace

kidney problems. Returns

o Grace the next week

Central Hospital where he

with SARS symptoms.

Doctors miss signs,

transfer him to York

Family, hospital staff

infected. Dies March 29.

patient moves is in a unit with no

to York Central precautions for 12 days.

Female, 80, infected at York Central Hospital. Shares room with Florence Dougherty, wife of James who had been at Grace and contracted SARS. York Central doctors misdiagnose both Florence and the 80-yearold woman, and transfer them to Brookside Retirement Home. Both get sicker and are sent back to York Central. Florence survives, the 80-year-old dies

April 12.

HOW TO READ THIS CHART **Route of infection:** The dotted lines reveal these close contacts – sometimes strangers lying next to each other in hospital, sometimes family members who did not know their loved one had SARS.

Movement of SARS-infected person: The arrows show how the disease spread from one place to another via someone who did not know they had SARS.

Death number: Each SARS death is identified by a number, showing the sequence in which people died. These numbers reveal the variation in how long patients survived after infection. For instance, death 7 occurs early in the chain, just 2 weeks after contact, whereas Toronto's last death, number 44 - a doctor at the Lapsley Family Clinic – survived more than 4 months after getting sick.

Eulialo Samson, 82,

sends him to Grace ER

March 16. Also present,

Rose and Joe Pollack -

Eulialo and family

belong to Catholic

community group

infection link unconfirmed.

members infected. Eulialo

dies at Centenary Hospital

April 1. Family members

quarantined after infected

Samson family member

attends retreat. Samson

family members visit

Lapsley Family Clinic in

late March, early April,

touching off new outbrea

among doctors and

retired janitor. Injured knee >

Death of health-care worker with SARS

Rose Pollack, 73. Wife of Joe. Though her husband was very ill with SARS-like symptoms, Grace doctors diagnose her fatigue, fainting and malaise as related to hunger and stress. She is sent home. A public health doctor steps in and insists Rose has SARS. She and her daughter, also ill, sent to Mount Sinai. Rose dies April 12.

SARS OUTBREAK

SCARBOROUGH GRACE HOSPITAL

Linked to at least: **27** SARS deaths **257** infections

249-bed community hospital

Outbreak started March 7 when a patient with severe respiratory symptoms was treated in ER, with no infection control precautions for 21 hours.

Hospital believed patient and family had TB. Although SARS diagnosis made by March 13, infection control was lax throughout the hospital. It was closed to new admissions on March 23. Victims' families often report they were not warned, not told to wear masks or take other precautions.

Infection continued to spread because, families say, hospital staff did not take SARS precautions seriously.

Death 6

Luigi Romita, 74, retired

TTC worker. Visits Grace

podiatry clinic March 18

says he's fine; gets fever

chills, cough, returns to

Grace March 22. Despite

previous stay at Grace,

doctors determine he does

not have SARS. Transferred

to Mount Sinai, then Toronto

and best friend, Joe Grande

General. Dies April 1. Ten

infected, including family

who dies.

Infected, but researchers do

not know how. Family doctor

classic SARS symptoms and

Family Clinic. Infected April 1-2 by Samson family members. Two other doctors also infected. When Yanga is intubated at Sunnybrook, nine health care workers, doctors and nurses, are LAPSLEY FAMILY infected due to improper gowning and masking. Patient coughing heavily, CLINIC frothy secretions. Yanga dies Aug. 13. He had been intubated for four months and was thought to be recovering, but suffered a relapse. Samson family members visit clinic Female, 69, infected when she visits Lapsley Family

Clinic in late March, same day as Samson family. Passes disease to daughter's roommate, nurse's aide Adela Catalon, who in turn spreads the disease in Philippines. Woman dies April 25. Doctors do not realize she is SARS patient until shortly before her death.

> family members home

Caesar Santos, 44. Contracted SARS when HOME he attended funeral visitation for Eulialo Samson. Dies April 24

of Eulialo Samson. Both infected at Grace Researchers have concluded that SARS March 16. Gregoria dies April 23.

Nesearchers nave concluded that SAKS

Came from SARS 1, but they are unsure how. The investigation continues.

Nestor Yanga, 54, doctor at Lapsley

Adela Catalon*, 46, nurse's aide

likely infected by her roommate's

mother, who in turn was infected

by visit to Lapsley Family Clinic

the same day Samson family

attends for treatment. Catalor

flies to Philippines to attend a

wedding and visit sick father.

there. Catalon dies April 14.

Father dies later, both in the

Philippines.

Touches off massive quarantine

* Because she died abroad, Catalon is

not officially listed as one of Toronto's

SARS deaths. We have included her

because she was infected here.

WEST PARK HEALTHCARE CENTRE

14 Scarborough

Grace nurses with

SARS go to West Park for treatment

16

Gregoria

Samson. 78.

Seamstress, wife

Tecla-Lai Yin Lin, 58, Scarborough Grace nurse who volunteered to care for 14 colleagues being treated for SARS at West Park Healthcare Centre. Dies July 19.

Chi Sui Lin, 77. from wife Tecla. West Park nurse Dies April 26.

RESEARCH: KEVIN DONOVAN AND TANYA TALAGA/TORONTO STAR

GRAPHICS: CATHERINE FARLEY/TORONTO STAR

Nelia Laroza, 51, North York General nurse. Care for SARS patients at the hospital. Careful with precautions, worrying family. Concerns related to her illness spark massive quarantine at son's school. Laroza dies June 29.

Female, 88. Visitor to

patient at North York

second outbreak.

General Hospital during

Hospitalized at Markham

Stouffville, Dies May 28.

Lax hospital precautions blamed. North York nurses and a junior doctor rang alarm bells but

After Day 10: Those

who died, did so

peacefully because

Mojgan Tehrani, 44. Pastry baker. Tehrani goes to North York General on May 20 for elective surgery to remove a cyst. She recovers on 4West, the ward discovered on May 22 to be SARS contaminated. She is released from hospital but public health and hospital officials did not alert her

CORONAVIRUS: Severe Acute Respiratory Syndrome (SARS) is caused by a type of coronavirus, a disease-producing agent commonly found in mammals. Coronaviruses

take their name from the halo (or

survived for three months or more. Outbreak 1 O Female SARS deaths per week 1 2 3 4 5 6 7* 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 Week of SARS outbreak

CENTRE

37

Istvan Biro, 67, St.

Infected after SARS

patient transfer from

North York General.

John's patient

enters ward via

The first SARS death in Toronto was March 5, the last Aug. 13. Most patients who died,

particularly those 60 and older with other health problems, passed away within three

weeks of contracting the disease. Several others, including a nurse and a doctor,

* Includes nurse's aide Adela Catalon, not officially listed as a Toronto SARS death

When they died

Lewis Huppert, 99. North York man slips in driveway March 22 and fractures pelvis. Treated at North York General, Unclear how he contracted SARS, but doctors theorize he was infected on 8th floor transferred to 4West, the orthopedic floor, where he spreads disease to numerous patients, touching off Toronto's second outbreak. Wife, daughter and son-in-law infected but recover. Huppert's respiratory problems diagnosed as pneumonia

symptoms often associated with an

in-hospital infection following an

operation. Huppert dies May 1.

corona) seen around the sun during

an eclipse. This fatal strain may have

jumped to humans from the civet cat.

ST. JOHN'S Male, 67. Patient at St. REHABILITATION John's Rehabilitation Centre in North York. Infected after disease enters St. John's due to patient transfer from North York General. Disease spreads through St. John's,

Two infected

patients

moved to

St. John's

Maurice Buckner, 57. Retired taxi driver. At St. John's Rehabilitation Centre recovering from lung transplant. Buckner dies May 29 <mark>at Toro</mark>nto General. Wife Susan sick but recovers. Blames public health and doctors for husband's death, saying they relaxed precautions too early.

> Kitty Chan, 66. Voluntarily quarantines herself after returning from trip to Hong Kong April 22 near end of first outbreak. Emerging, she visits son Hubert recovering from leg surgery at St. John's, on Mother's Day, May 11. Hubert has been infected after a patient transfer from North York General brought SARS to St. John's, infecting his physiotherapist. Kitty Chan, her husband and son all get sick Kitty dies June 7, others

NORTH YORK GENERAL HOSPITAL

Linked to at least: 14 SARS deaths 118 infections

Regional teaching hospital with 300 acute-care beds and 160 long-term care beds

Outbreak started here as early as the first week of April. It spread through orthopedic ward on fourth floor (4West). Toronto Public Health and hospital officials did not confirm outbreak until

Top doctors misdiagnosed two clusters of SARS patients. One on 4West, the other, three patients on the hospital's psychiatric ward.

Berta Weinstain, 90, of North York. Once a top criminal lawyer in Russia. Infected along with three family members keeping vigil while she recovered from surgery on 4West at North York General, Dies May 19, Two family members also later die. Mark Weinstain, 63, of North York. Former electrical engineer in Russia, Son of Berta Weinstain Mark visits his mother often. along with sister Lidia and her son, Vadim. Dies June 7

> Lidia Bychutsky, 67. Once a neurosurgeon in the Ukraine, Lidia immigrated to Canada and worked as a nurse's aide. Daughter of Berta Weinstain. Lidia and other family members are never told to protect themselves when they entered North Yorl General to visit Berta. Later, when Lydia, her brother and son become infected, doctors

misdiagnose them. Lidia dies May 28.

Death 43

until it is too late. Tehrani dies Aug. 11.

What went wrong

SARS is difficult to diagnose. Mistakes (misdiagnosis, lack of precautions) were made in both outbreaks, leading to more infections. For 22 of the deaths for which The Star could obtain information about the patients, here is what happened

Deat numl	••	Age	Misdiag- nosis	Sent home or to other hospital without precautions	Lack of hospital precau- tions	Infected others
SA	RS outbreak 1					
1	Kwan Sui Chu	78	1			/
2	Tse Chi Kwai	43	1		/	/
3	Joseph Pollack	76	1	1	/	/
4	James Dougherty	77	1	1	/	1
6	Luigi Romita	74	1	1	/	/
7	Eulialo Samson	82	1	1	/	/
9	Joe Grande	62	1	1	/	
13	Rose Pollack	73	1	1	/	1
16	Gregoria Samson	78	1			/
20	Chi Sui Lin	77				
42	Tecla Lin	58				1
44	Nestor Yanga	54			/	1

25	Lewis Huppert	99	/		1	/
28	Berta Weinstain	90	1		1	1
32	Lidia Bychutsky	67			1	
33	Maurice Buckner	57	1	1	1	1
35	Kitty Chan	66			1	
36	Mark Weinstain	63			1	
37	Istvan Biro	67	1		1	
40	Nelia Laroza	51				1
43	Mojgan Tehrani	44	1	1	1	1

Adela Catalon 46

These deaths can also be traced back to the original Grace outbreak. The Star was unable to identify the victim or get medical details.

Female, 78. Infected at Scarborough Grace. Dies March 31.

Joe Grande, 62, retired

Public Health, and then

building superintendent. Visits

Grace hospital. Grace, Toronto

best friend, Luigi Romita, at

Markham Stouffville hospital

fail to diagnose him as SARS

home; public health promises

patient. Hospitals send him

to send family masks and

does not. Wife infected, but

survives. Grande dies April 5.

thermometers, but

Female, 57. Infected at Grace Hospital and transferred to Markham Stouffville hospital, dies April 2.

Female, 75. York region resident infected at Grace Hospital and transferred to St. Joseph's hospital for treatment. Dies April 6.

Female, 86. Dies April 12.

Female, 99. Dies April 17.

Male, 63. Dies April 22.

26 Female, 67. Dies May 11.

Male, 62. Hewlett Packard employee who broke quarantine to go to work March 29 and April 1, infecting others. Dies May 25.

19 Female, 64. Dies April 25.

Female, 79. Dies April 26.

Male, 39. Dies April 30, the

Male, 72. Dies April 30.

youngest SARS victim to die.

What SARS does

Severe Acute Respiratory Svndrome different ways. stronger and younger with fewer underlying problems (such as diabetes, heart disease) have a better chance of survival.

Exhaustion, fever, muscle aches, chills, shortness affects people in of breath, a slight cough, headaches and sore Patients who are throat. First days similar to bad case of the flu. Some patients report food and water has a bad taste. X-rays show fluid in the lungs. Temperatures usually 38.4C to 40C (normal temperature is 37C).

3-5 days after exposure: Day 5: Symptoms continue and get worse. Heavy, fast and dry cough. Some people coughed so hard they could not stand. Many patients also got diarrhea, sweats and reported a rapid heart rate and memory loss.

treatment is a drug cocktail of antibiotics, sometimes including an antiviral medication called Ribavirin, normally used to treat pneumonia in young patients. Many patients intubated at this point, meaning a tube is forced down their throat to help their raw lungs breathe. Patients sedated and many

Day 6-10: Patient usually

hospitalized. Typical

they were sedated. Typically, they passed away due to multiorgan failure. Survivors report vivid, colourful dreams after they regained consciousness. During recovery, patients reported recurring shortness of chemically paralyzed so they breath. The long-term effect of SARS is do not try to pull out the unknown.

were not able to have a funeral at the time of death. Bodies were either cremated immediately, or kept in cold storage in a sealed body bag until a funeral could be held (after infected. but surviving, family members had finished quarantine) When funerals were held, the casket was closed.

Burial: Most families

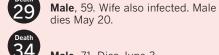
Other deaths connected with the North York General outbreak:



Male, 45. North York General patient infected as part of new outbreak. Dies June 19.



Other deaths that occurred during North York General outbreak:



Male, 71. Dies June 3.



Female, 76. Dies July 11