



ACUTE RESPIRATORY VIRUS SURVEILLANCE IN CAIRO AND ALEXANDRIA, EGYPT JULY 2000 TO JUNE 2001

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■ **Introduction & Background**

- **The influenza surveillance program in Egypt is part of the influenza surveillance network being established in the WHO Eastern Mediterranean Region (EMR).**

OBJECTIVES

- **Primary Objectives:**
 - To isolate and characterize circulating influenza virus strains.
 - To establish an influenza surveillance network within the WHO EMR to provide virological and epidemiological information to member countries and the WHO Global Influenza Program.
 - Virus isolates from this study are supplied to the WHO Task Force on Influenza Vaccines for evaluation and potential incorporation into the next season's vaccine.

OBJECTIVES

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- **Secondary Objectives:**
 - To develop the capability for influenza culturing and identification within the Central MOH Laboratories of the participating countries.
 - To identify viral respiratory pathogens other than influenza viruses causing morbidity.
 - To develop capabilities for in-country surveillance of influenza and other respiratory viruses.

MATERIALS & METHODS



■ Study Sites:

- Alexandria Fever Hospital, Alexandria
- Shoubra (Kitchner) General Hospital, Cairo



MATERIALS & METHODS



■ Study Population

- Patients were recruited from individuals visiting the hospitals' outpatient clinics during routine clinic hours.
- No age or gender exclusion.
- Patients must have been in Egypt for five days prior to presentation.

■ Clinical Case Definition (modified WHO)

- $> 38.5^{\circ}\text{C}$
- Onset of influenza like illness (ILI) within 72 hrs
- Respiratory manifestations of cough, sore throat, or coryza
- Myalgia or headache

MATERIALS & METHODS



- **Clinical procedures**

- Questionnaire (demographic and clinical data)
- Throat swab
- Liquid nitrogen for storage and transport

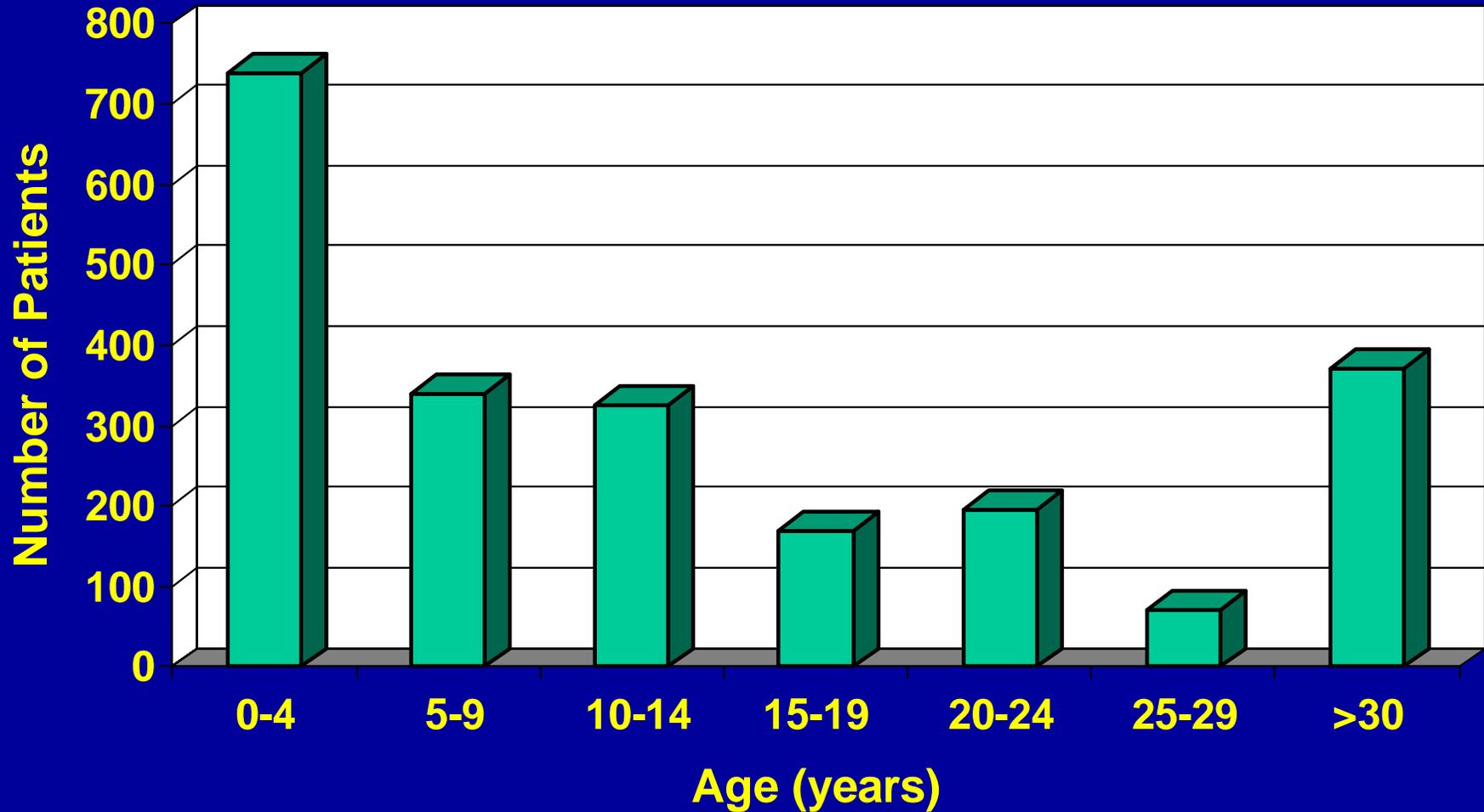
MATERIALS & METHODS



- **Laboratory procedures**
 - **Virology procedures**
 - **Tissue culture: MDCK, MRC-5, H292 & LLCMK2**
 - **Identification of virus isolates:**
 - **Immunofluorescent antibody assay (IFA; Chemicon International Inc.)**
 - **Heamagglutination inhibition (HAI; WHO, Flu typing kit)**
 - **Polymerase Chain Reaction (PCR)**

Age Distribution of Patients, Egypt

July 2000 - June 2001 [n = 2,212]



Virus Isolation, Alexandria

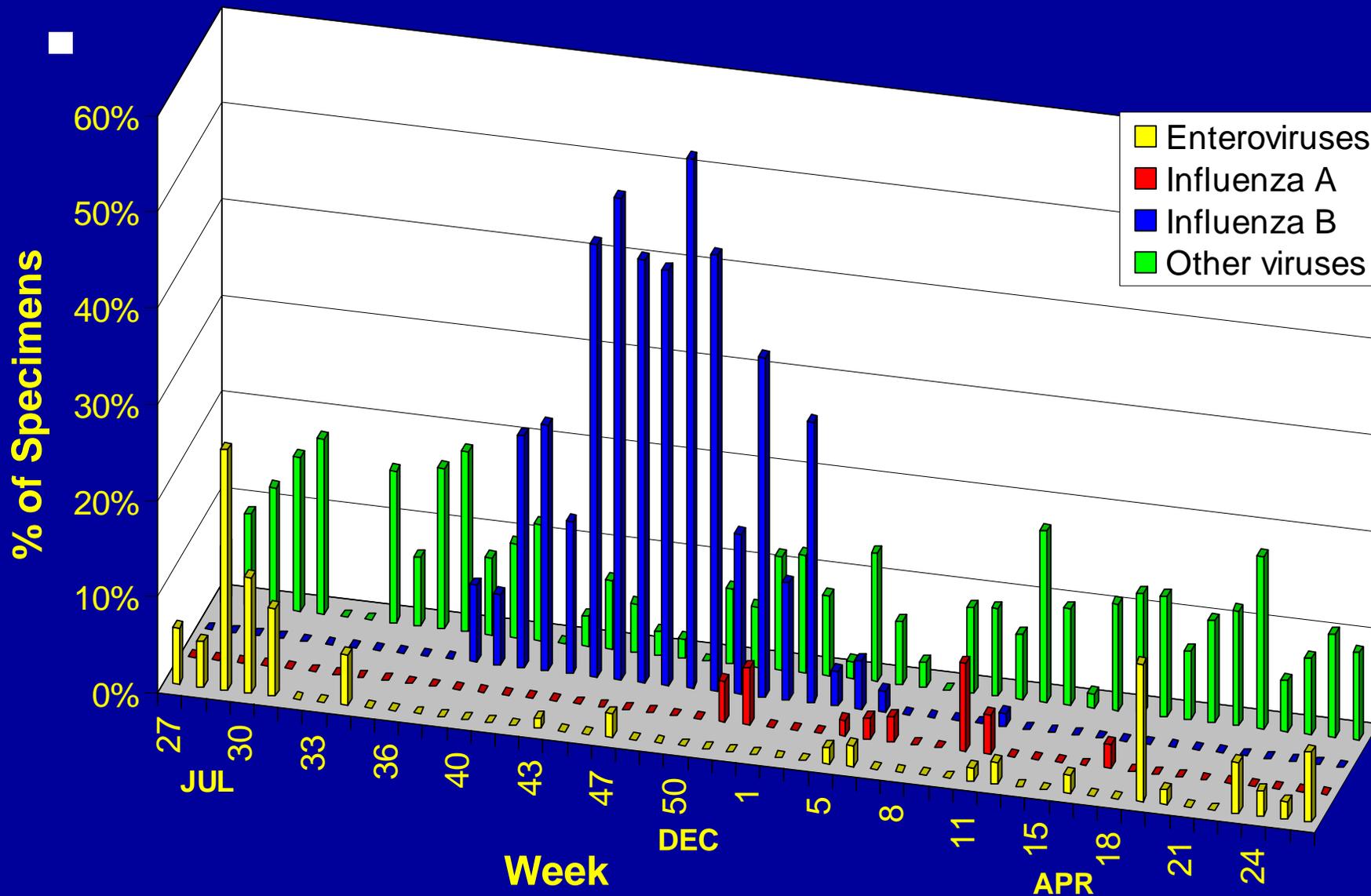
July 2000 - June 2001 [n = 1855]

Virus	Number of Isolates	%
Influenza A	11 (H1N1) 2 (H3N2)	3.0%
Influenza B	244	56.9%
Enteroviruses	26	6.1%
Adenoviruses	30	7.0%
Parainfluenza	1	0.2%
Other	115	26.8%
Total Isolates	429	100%

- Isolation rate: 23.1% (429/1855)

Virus Isolation by Week, Alexandria

July 2000 - June 2001 [n = 1855]



Virus Isolation, Cairo

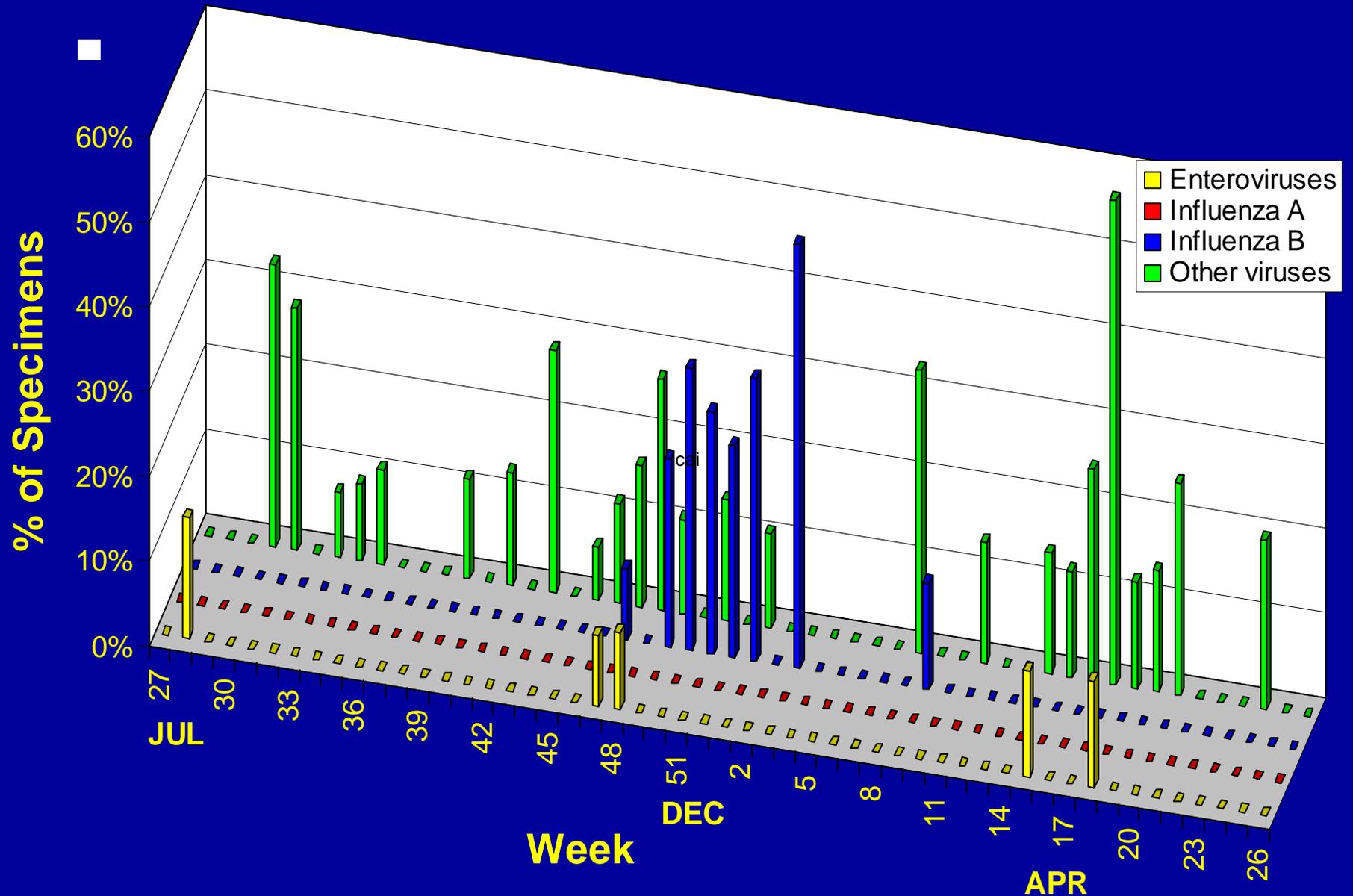
July 2000 - June 2001 [n = 357]

Virus	Number of Isolates	%
Influenza A	3 (H1N1)	5.3%
Influenza B	12	21.0%
Enteroviruses	5	8.8%
Adenoviruses	6	10.5%
Parainfluenza	0	0%
Other	31	54.4%
Total Isolates	57	100%

- **Isolation Rate 16% (57/357)**

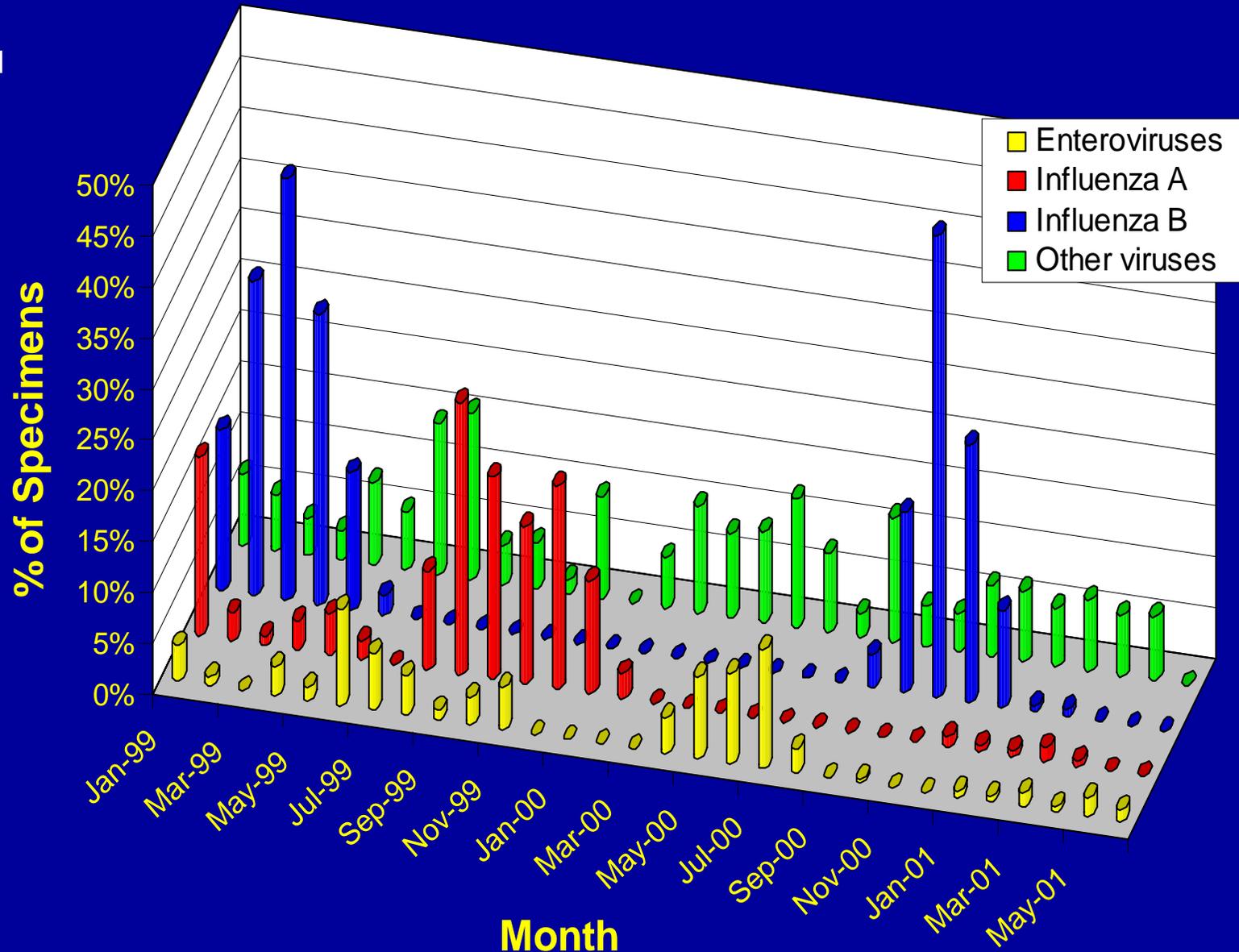
Virus Isolation by Week, Cairo

July 2000 - June 2001 [n = 357]



Virus Isolation by Month, Alexandria

January 1999 - June 2001 [n = 3127]



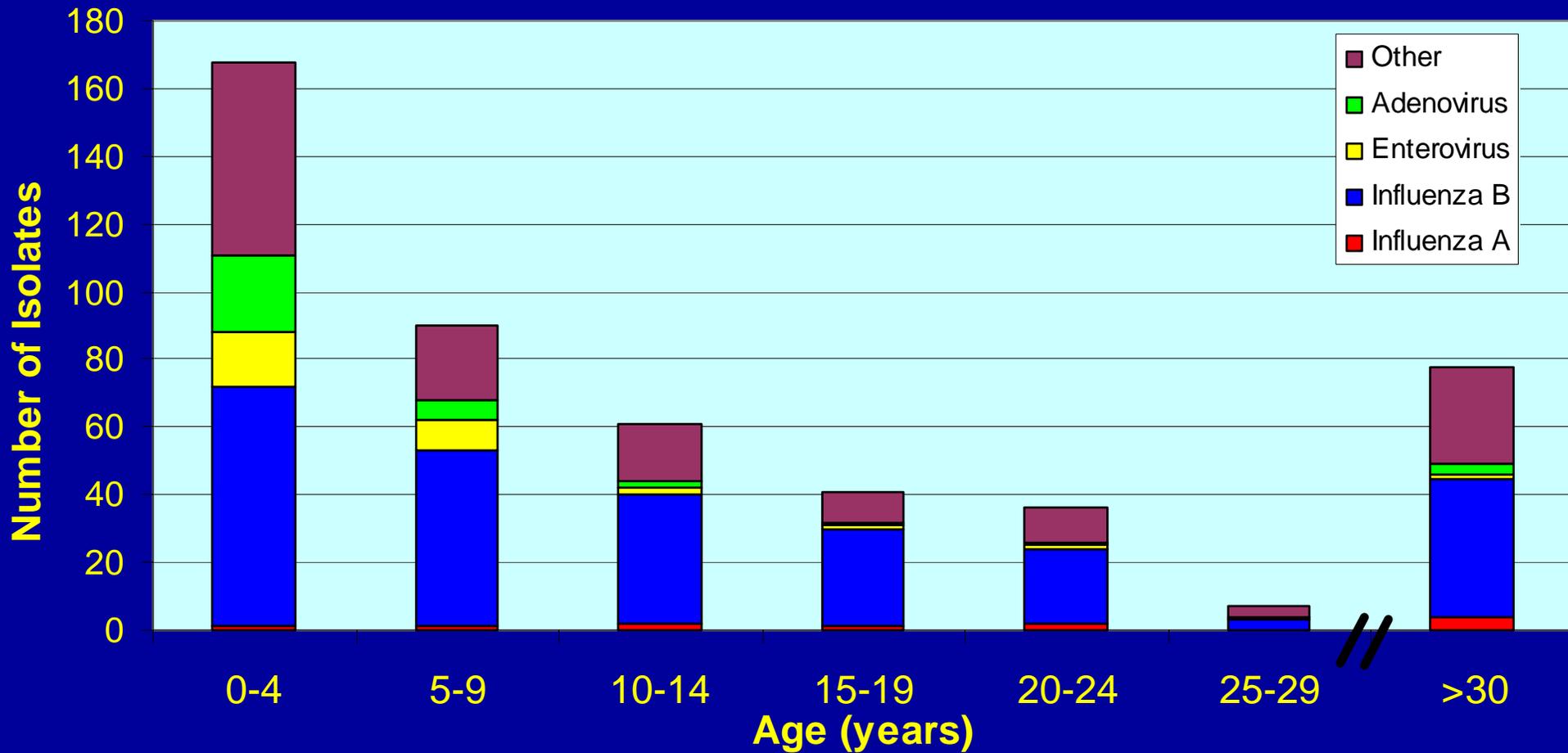
Viruses Isolated by Patient Age, Egypt

July 00- June 01 [n = 2,212]

Virus	Number of Isolates	Percent of Isolates	Median Age of Patients
Total Influenza	267	56	10 yrs
Influenza A	11		20
Influenza B	256		10
Total Enteroviruses	31	6.5	4
Coxsackie viruses	18		6
Echoviruses	10		3
Untyped Enteroviruses	3		4
Adenoviruses	36	7.5	3
Other	147	30	8
Total	480	100	8

Type of Isolated Virus by Age of Patient, Egypt

[n = 2212]



Selected Adenovirus Isolates - Egypt



Type	# Samples
Serotype 3 & 7	7
Serotype 1	6
Serotype 7	2
Serotype 2	1
Serotype 2 & 3	1

Selected Enterovirus Isolates - Egypt



Type	# Samples
Echo 9	7
Echo 4	4
Echo 1	1
Echo 7	1
Echo 19	1
Echo 20	1
Coxsackie B2	2
Coxsackie B4	2
Coxsackie B3	1

CONCLUSIONS

- ■ Influenza B predominated and sub-typed viruses were closely related to a B/Sichuan/379/99-like strain.
- Sub-typed influenza A (H1N1) was A/New Caledonia/20/99-like.
- Influenza A and B were the most commonly isolated viruses and were particularly prevalent in patients >10.
- Many different enteroviruses and adenoviruses caused ILI in Egypt, particularly among patients <10.

Acknowledgments



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