12° CONGRESSO NAZIONALE

ICAR

Italian **C**onference on
AIDS and **A**ntiviral **R**esearch

Reach out for including all

12-16 ottobre 2020

DIGITAL EDITION

Promosso da

SIMIT Società Italiana di Malattie Infettive e Tropicali

e da

INMI, Istituto Nazionale per le Malattie Infettive
ISS, Istituto Superiore di Sanità
AMCLI, Associazione Microbiologi Clinici Italiani
SIICA, Società Italiana di Immunologia, Immunologia Clinica e Allergologia
SIMaST, Società Interdisciplinare per lo Studio delle Malattie Sessualmente Trasmissibili
SITA, Società italiana per la Terapia Antinfettiva
SIV-ISV, Società Italiana di Virologia - Italian Society for Virology
ANLAIDS, Associazione Nazionale per la lotta all'AIDS
ARCIGAY, Associazione LGBT Italiana
ASA Onlus, Associazione Solidarietà AIDS Onlus
EpaC Onlus, Associazione EpaC Onlus
LILA, Lega Italiana per la lotta contro l'AIDS
MARIO MIELI, Circolo di Cultura Omosessuale
NADIR, Associazione Nadir Onlus
NPS Italia Onlus, Network Persone Sieropositive
PLUS, Persone LGBT Sieropositive onlus

Presidenza del Congresso

Massimo Clementi, Milano
Sandro Mattioli, Bologna
Cristina Mussini, Modena
Guido Silvestri, Atlanta
Marcello Tavio, Ancona

effetti

12° CONGRESSO NAZIONALE
ICAR
Italian Conference on AIDS and Antiviral Research
Reach out for including all
12-16 ottobre 2020
DIGITAL EDITION

Post-migration HIV infection in the foreign-born population enrolled in the ICONA cohort.

A. Saracino[1], P. Lorenzini[2], M.M. Santoro[3], A. Tavelli[4], S Rusconi[5], N. Bobbio[6], A. Mondi[2], S. Lo Caputo[7], A. Antinori[2], E. Girardi[8], A. d'Arminio Monforte[9], L. Monno[1]

1 Clinic of Infectious Diseases, Department of Biomedical Sciences and Human Oncology, University of Bari, Bari, Italy;
2 HIV/AIDS Unit, INMI 'L. Spallanzani' IRCCS, Rome, Italy;
3 University of Rome 'Tor Vergata', Department of Experimental Medicine, Rome, Italy;
4 Icona Foundation, Milan, Italy;
5 Infectious Diseases Unit, DIBIC Luigi Sacco, University of Milan, Milan, Italy;
6 Department of Infectious Diseases, Galliera Hospital, Genoa, Italy;
7 Clinic of Infectious Diseases, University of Foggia, Foggia, Italy;
8 Clinical Epidemiology Unit, INMI 'L. Spallanzani' IRCCS, Rome, Italy;
9 Department of Health Sciences, ASST Santi Paolo e Carlo, University of Milan, Milan, Italy.

Disclosures

12° CONGRESSO NAZIONALE
Italian Conference on AIDS and Antiviral Research
12-16 ottobre 2020

First Author (A. Saracino) declares relationships with the following commercial entities:

Gilead, ViiV, Abbvie, MSD, Janssen

Funding

- ***This study has been supported by an unrestricted Medical Grant from Gilead Sciences.***

- *ICONA Foundation is supported by unrestricted grants from Gilead sciences, Janssen, MSD, Thera technologies and viiV Healthcare*

Background

- Migrants account for 40% of all new HIV diagnoses in Europe and 30% in Italy in last years [*ECDC 2020*].
- According to recent studies, a high rate (nearly 60%) of these infections are acquired after migrating to Europe, attesting a gap in prevention strategies targeted to this special population [*Alvarez-del Arco, 2017]*.
- Only limited data are available on the extent of post-migration HIV infection in Italy.
- Herein, we aimed **to assess the proportion of post-migration HIV acquisition in migrants enrolled in the ICONA cohort**

Methods

12° CONGRESSO NAZIONALE
Italian Conference on AIDS and Antiviral Research
12-16 ottobre 2020

- All foreigners (**birth country other than Italy**; hereafter **"migrants"**), for whom information regarding **date of arrival to Italy** was available in ICONA database, were included.
- **Timing of HIV infection was estimated based on:**

  i) date of seroconversion (when available), or calculated as midpoint between dates of last negative and first HIV positive test with a maximum of 2 years (yrs) between test dates;

  ii) *CD4 depletion model parameters* [*Lodi et al, CID 2011*];

  iii) *rate of ambiguous nucleotides* (NT) (R/Y/K/M/S/W/B/D/H/V/N) in pre-ART *pol* sequences (when available) using BioEdit.

  A sequence ambiguity threshold of 0.5% was used to discriminate recent (<1yr) from non-recent (>1yr) infections [*Kouyos et al, CID 2011*].

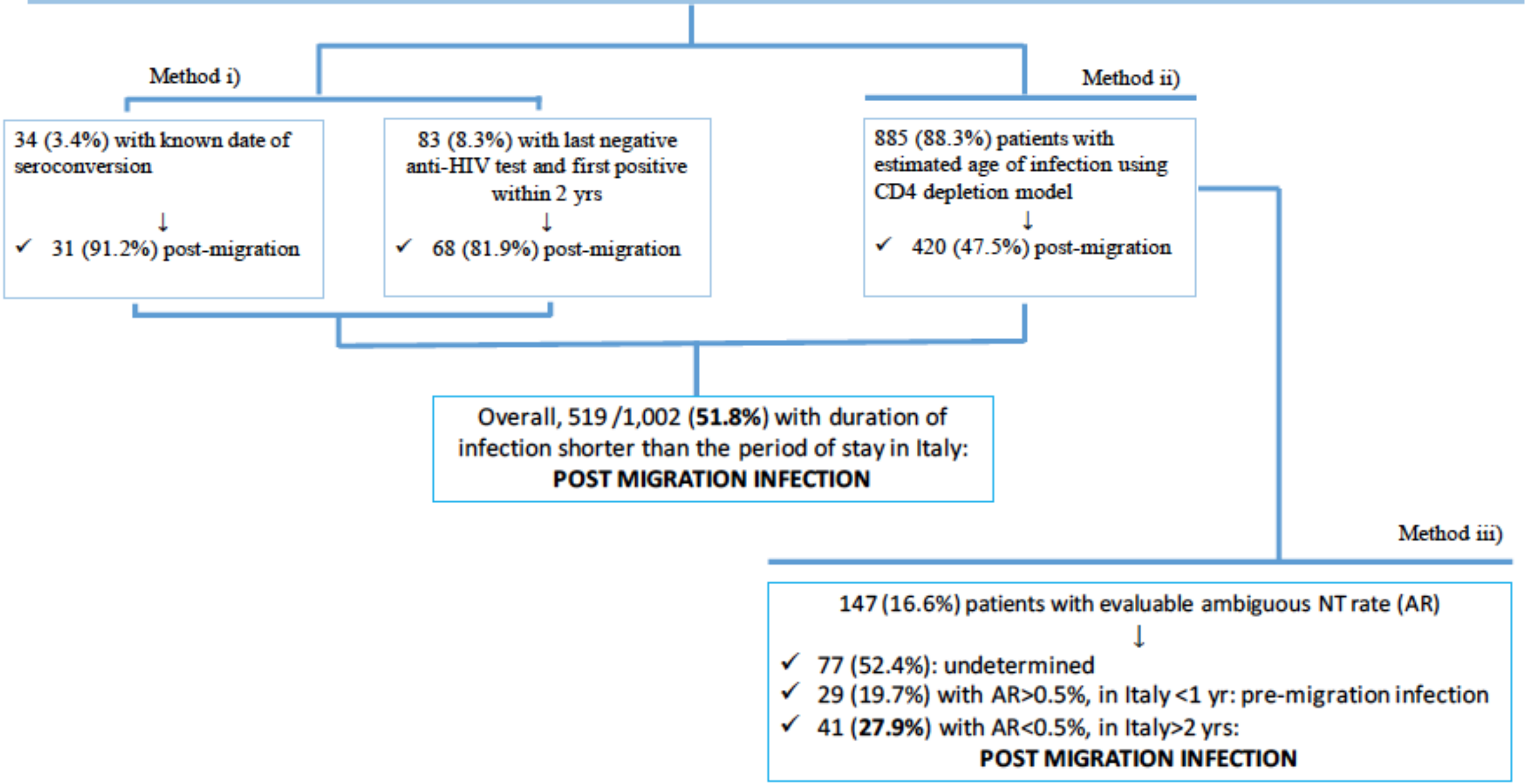
- **Logistic regression** was used to investigate factors associated with probability of HIV infection after arrival.

Results

- A total of **1,002 migrants** [58% males, median [IQR] age 33 (27-39) yrs, 44% from Africa] were included in the analysis

	Overall N=1002	HIV infection before migration N=483	HIV infection post migration N=519	p-value
Gender, n(%)				
M	577 (57.6%)	252 (52.2%)	325 (62.6%)	0.001
F	425 (42.4%)	231 (47.8%)	194 (37.4%)	
Age, years, median (IQR)	33 (27-39)	32 (27-38)	34 (28-41)	0.003
Mode of HIV infection, n(%)				
Heterosexual	576 (57.5%)	321 (66.5%)	255 (49.1%)	<0.001
IDU	52 (5.2%)	18 (3.7%)	34 (6.6%)	
MSM	268 (26.8%)	94 (19.5%)	174 (33.5%)	
other/unkwnon	106 (10.6%)	50 (10.4%)	56 (10.8%)	
Aids at enrolment, n(%)	172 (17.2%)	124 (25.7%)	48 (9.3%)	<0.001
HCVAb at enrolment, n(%)	74 (7.4%)	28 (5.8%)	46 (8.9%)	0.129
HBsAg at enrolment, n(%)	64 (6.4%)	39 (8.1%)	25 (4.8%)	0.101
CD4 cells/mmc, median (IQR)	308 (123-517)	173 (48-322)	440 (265-646)	<0.001
HIV RNA log copies/mL, median (IQR)	4.7 (4.0-5.3)	4.9 (4.2-5.5)	4.5 (3.7-5.1)	<0.001
Level of education, n(%)				
primary	146 (14.6%)	73 (15.1%)	73 (14.1%)	<0.001
secondary	178 (17.8%)	90 (18.6%)	88 (17.0%)	
high school	202 (20.2%)	85 (17.6%)	117 (22.5%)	
university	72 (7.2%)	18 (3.7%)	54 (10.4%)	
unknown	404 (40.3%)	217 (44.9%)	187 (36.0%)	
Job, n(%)				
employed/self employed	348 (34.7%)	137 (28.4%)	211 (40.6%)	<0.001
unemployed	339 (33.8%)	189 (39.1%)	150 (28.9%)	
occasional	96 (9.6%)	52 (10.8%)	44 (8.5%)	
student/housewife	85 (8.5%)	42 (8.7%)	43 (8.3%)	
other/missing	134 (13.4%)	63 (13.0%)	71 (13.7%)	
Nation, n(%)				
Africa	413 (41.2%)	248 (51.6%)	165 (31.7%)	<0.001
North Africa	31 (3.1%)	11 (2.3%)	20 (3.8%)	
America Central and south America	283 (28.2%)	106 (22.0%)	177 (34.0%)	
Asia	40 (4.0%)	15 (3.1%)	25 (4.8%)	
Europe	104 (10.4%)	43 (8.9%)	61 (11.7%)	
East Europa	115 (11.5%)	52 (10.8%)	63 (12.1%)	
other	16 (1.6%)	6 (1.3%)	10 (1.9%)	

Fig. 1. Flow Diagram for 1,002 enrolled migrants with known date of arrival to Italy (ICONA cohort)



Logistic regression analysis

Crude and adjusted odds ratio (OR) of **factors associated with the probability of post-migration HIV acquisition** in 1,002 subjects with known date of arrival in Italy

	OR	95%CI		p-value	AOR	95%CI		p-value
Gender								
M	1.00				1.00			
F	1.54	1.19	1.98	0.001	1.13	0.78	1.63	0.527
Age, 10 years increase	1.02	1.01	1.04	0.003	1.65	1.38	1.98	0.000
Mode of HIV infection								
Heterosexual	1.00				1.00			
IDU	2.38	1.31	4.31	0.004	1.36	0.60	3.08	0.463
MSM	2.33	1.73	3.15	0.000	1.53	0.99	2.37	0.053
other/unkwnon	1.41	0.93	2.14	0.105	1.39	0.84	2.30	0.203
Aids at enrolment	0.30	0.21	0.42	0.000	0.66	0.42	1.03	0.068
HCVAb at enrolment	1.55	0.95	2.53	0.080	1.32	0.68	2.58	0.417
HBsAg at enrolment	0.57	0.34	0.96	0.035	0.61	0.33	1.11	0.106
CD4 cells/mmc, 100 cell/mmc increase	1.48	1.39	1.57	0.000	1.49	1.38	1.62	0.000
HIV RNA, 1 log copies/mL increase	0.70	0.61	0.79	0.000	1.02	0.87	1.19	0.796
Level of education								
Primary	1.00				1.00			
Secondary	0.98	0.63	1.51	0.920	0.73	0.43	1.25	0.256
high school	1.38	0.90	2.11	0.144	1.04	0.62	1.74	0.887
University	3.00	1.61	5.60	0.001	1.54	0.75	3.15	0.239
Unknown	0.86	0.59	1.26	0.441	0.80	0.51	1.25	0.327
Job								
employed/self employed	1.00				1.00			
Unemployed	0.52	0.38	0.70	0.000	0.58	0.39	0.84	0.004
Occasional	0.55	0.35	0.87	0.010	0.63	0.36	1.12	0.114
student/housewife	0.66	0.41	1.07	0.093	0.93	0.52	1.67	0.807
other/missing	0.73	0.49	1.09	0.127	0.91	0.55	1.49	0.702

Conclusions

- Based on a statistical approach combining information on arrival date, last testing and CD4 count, **>50% of HIV infections was estimated to be acquired post-migration**, similarly to other European studies.
- **Based on sequence data**, we also were able **to confirm that in >25% of cases** HIV transmission occurred in Italy.
- This calls for urgent actions in order to prevent exposure to HIV in migrants**.**

Acknowledgments

Icona Foundation Study Group

12° CONGRESSO NAZIONALE
Italian Conference on AIDS and Antiviral Research
12-16 ottobre 2020

- **BOARD OF DIRECTORS**: A d'Arminio Monforte (President), A Antinori (Vice-President), M Andreoni, A Castagna, F Castelli, R Cauda, G Di Perri, M Galli, R Iardino, G Ippolito, A Lazzarin, GC Marchetti, G Rezza, F von Schloesser, P Viale.
- **SCIENTIFIC SECRETARY**: A d'Arminio Monforte, A Antinori, A Castagna, F Ceccherini-Silberstein, A Cozzi-Lepri, E Girardi, A Gori, S Lo Caputo, F Maggiolo, C Mussini, M Puoti, CF Perno. STEERING COMMITTEE: A Antinori, F Bai, A Bandera, S Bonora, M Borderi, A Calcagno, MR Capobianchi, A Castagna, F Ceccherini-Silberstein, S Cicalini, A Cingolani, P Cinque, A Cozzi-Lepri, A d'Arminio Monforte, A Di Biagio, R Gagliardini, E Girardi, N Gianotti, A Gori, G Guaraldi, G Lapadula, M Lichtner, A Lai, S Lo Caputo, G Madeddu, F Maggiolo, G Marchetti, E Merlini, C Mussini, S Nozza, CF Perno, S Piconi, C Pinnetti, M Puoti, E Quiros Roldan, R Rossotti, S Rusconi, MM Santoro, A Saracino, L Sarmati, V Spagnuolo, V Svicher, L Taramasso.
- **STATISTICAL AND MONITORING TEAM**: A Cozzi-Lepri, I Fanti, L Galli, P Lorenzini, A Rodano', M Macchia, A Tavelli. COMMUNITY ADVISORY BOARD: A Bove, A Camposeragna, M Errico, M Manfredini, A Perziano, V Calvino. BIOLOGICAL BANK INMI: F Carletti, S Carrara, A Di Caro, S Graziano, F Petroni, G Prota, S Truffa.
- **PARTICIPATING PHYSICIANS AND CENTERS**: Italy A Giacometti, A Costantini, V Barocci (Ancona); G Angarano, L Monno, E Milano (Bari); F Maggiolo, C Suardi (Bergamo); P Viale, V Donati, G Verucchi (Bologna); F Castelnuovo, C Minardi, E Quiros Roldan (Brescia); B Menzaghi, C Abeli (Busto Arsizio); L Chessa, F Pes (Cagliarti); B Cacopardo, B Celesia (Catania); J Vecchiet, K Falasca (Chieti); A Pan, S Lorenzotti (Cremona); L Sighinolfi, D Segala (Ferrara); P Blanc, F Vichi (Firenze); G Cassola, M Bassetti, A Alessandrini, N Bobbio, G Mazzarello (Genova); M Lichtner, L Fondaco, (Latina); P Bonfanti, C Molteni (Lecco); A Chiodera, P Milini (Macerata); G Nunnari, G Pellicanò (Messina); A d'Arminio Monforte, M Galli, A Lazzarin, G Rizzardini, M Puoti, A Castagna, ES Cannizzo, MC Moioli, R Piolini, D Bernacchia, A Poli, C Tincati, (Milano); C Mussini, C Puzzolante (Modena); C Migliorino, G Lapadula (Monza); V Sangiovanni, G Borgia, V Esposito, G Di Flumeri, I Gentile, V Rizzo (Napoli); AM Cattelan, S Marinello (Padova); A Cascio, M Trizzino (Palermo); D Francisci, E Schiaroli (Perugia); G Parruti, F Sozio (Pescara); C Lazzaretti, R Corsini (Reggio Emilia); M Andreoni, A Antinori, R Cauda, A Cristaudo, V Vullo, R Acinapura, S Lamonica, M Capozzi, A Mondi, A Cingolani, M Rivano Capparuccia, G Iaiani, A Latini, G Onnelli, MM Plazzi, G De Girolamo, A Vergori (Roma); M Cecchetto, F Viviani (Rovigo); G Madeddu, A De Vito(Sassari); B Rossetti, F Montagnani (Siena); A Franco, R Fontana Del Vecchio (Siracusa); C Di Giuli (Terni); P Caramello, G Di Perri, S Bonora, GC Orofino, M Sciandra (Torino); A Londero (Udine); V Manfrin, G Battagin (Vicenza); G Starnini, A Ialungo (Viterbo).