University of Athens

Organisation Against Drugs

NSRF 2007-2013 programme for development

An integrated prevention initiative to stop HIV-1 outbreak among IDUs in Athens Metropolitan Area: Preliminary data of the RDS study

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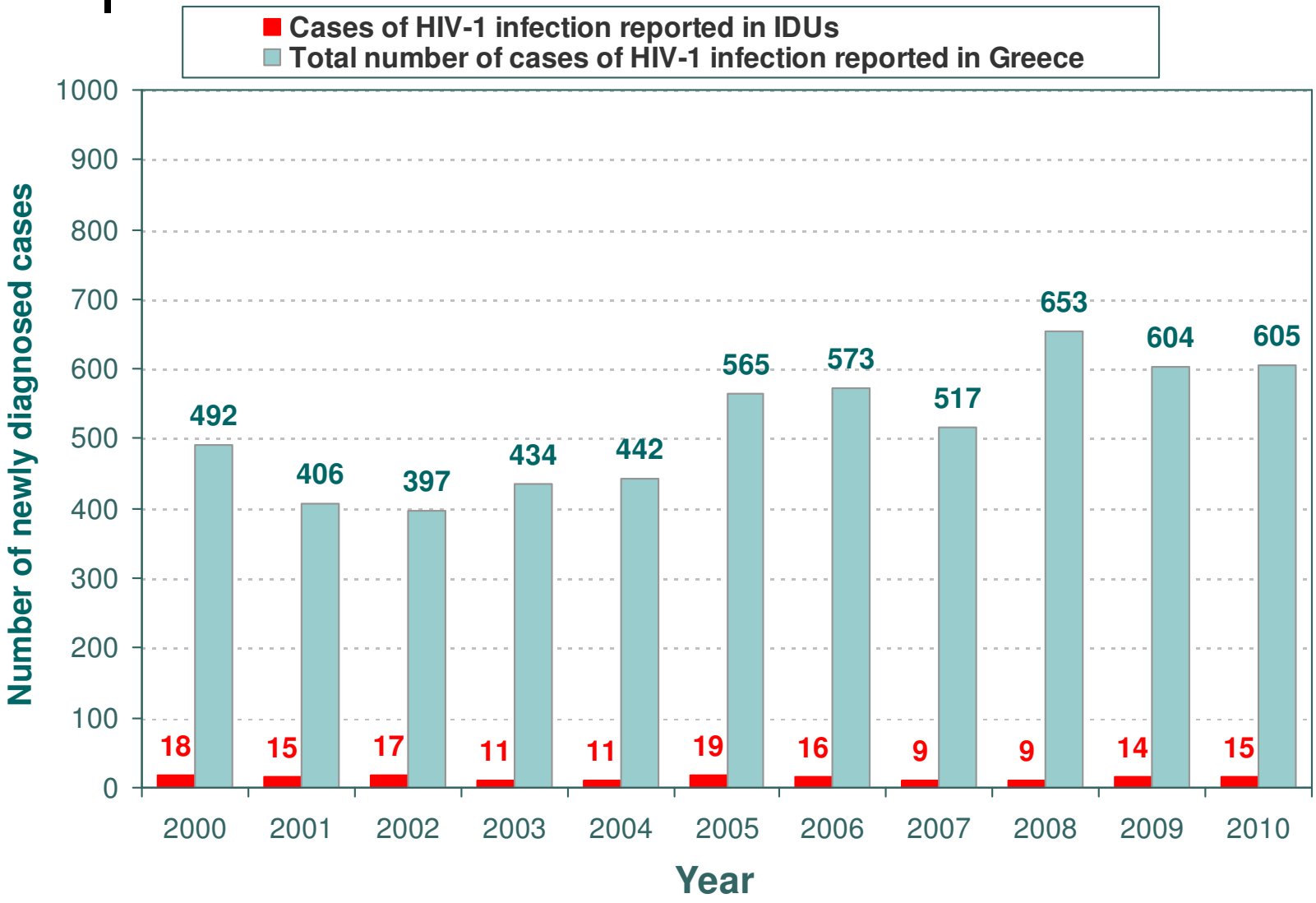
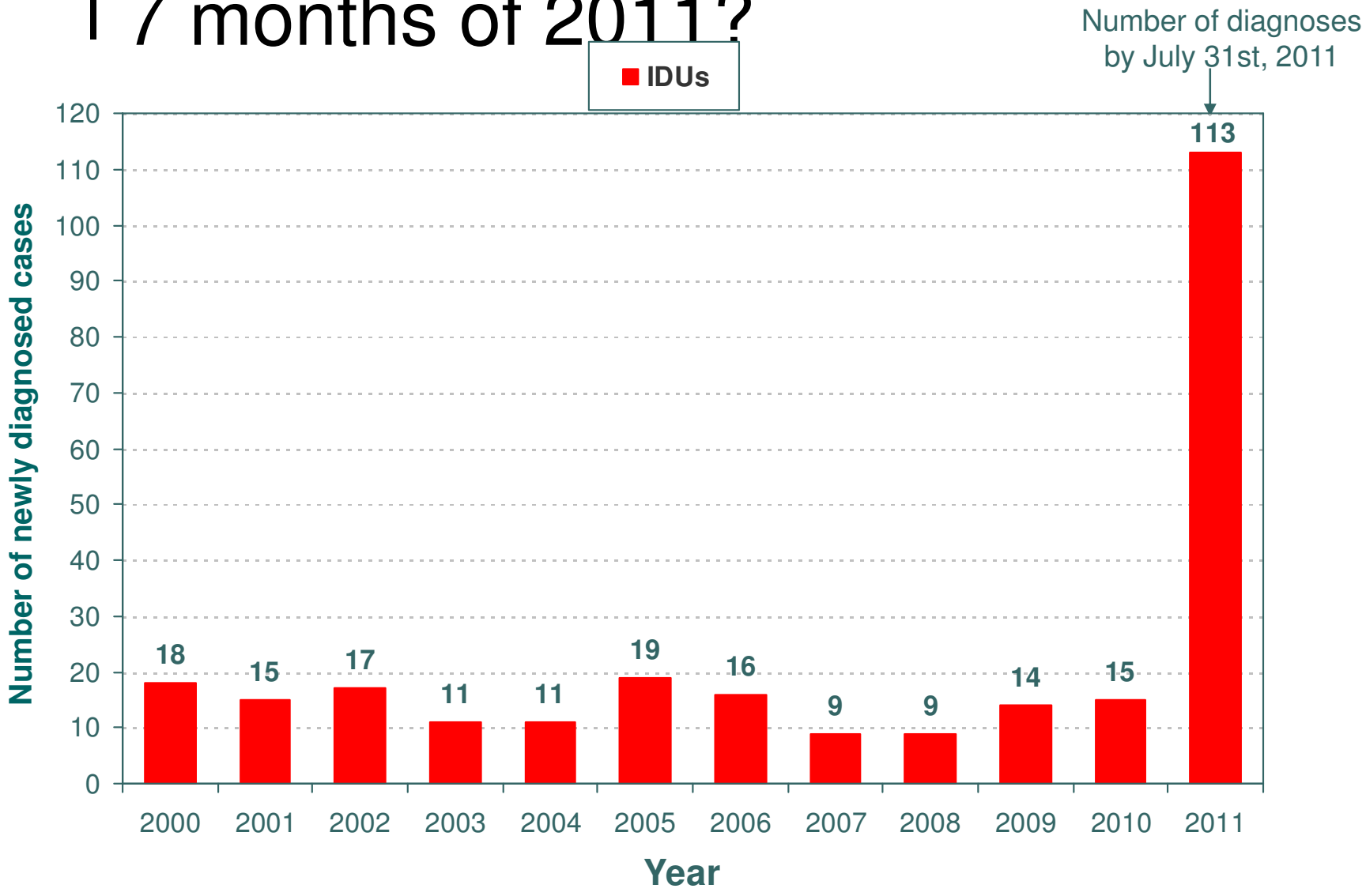
Newly diagnosed cases of HIV-1 infections reported in Greece, 2000-2010



What was observed during the first
7 months of 2011?



HIV-1 outbreak among injecting drug users in Greece, 2011: a preliminary report

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Euro Surveill. 2011;16(36):pii=19962. Available online: http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19962

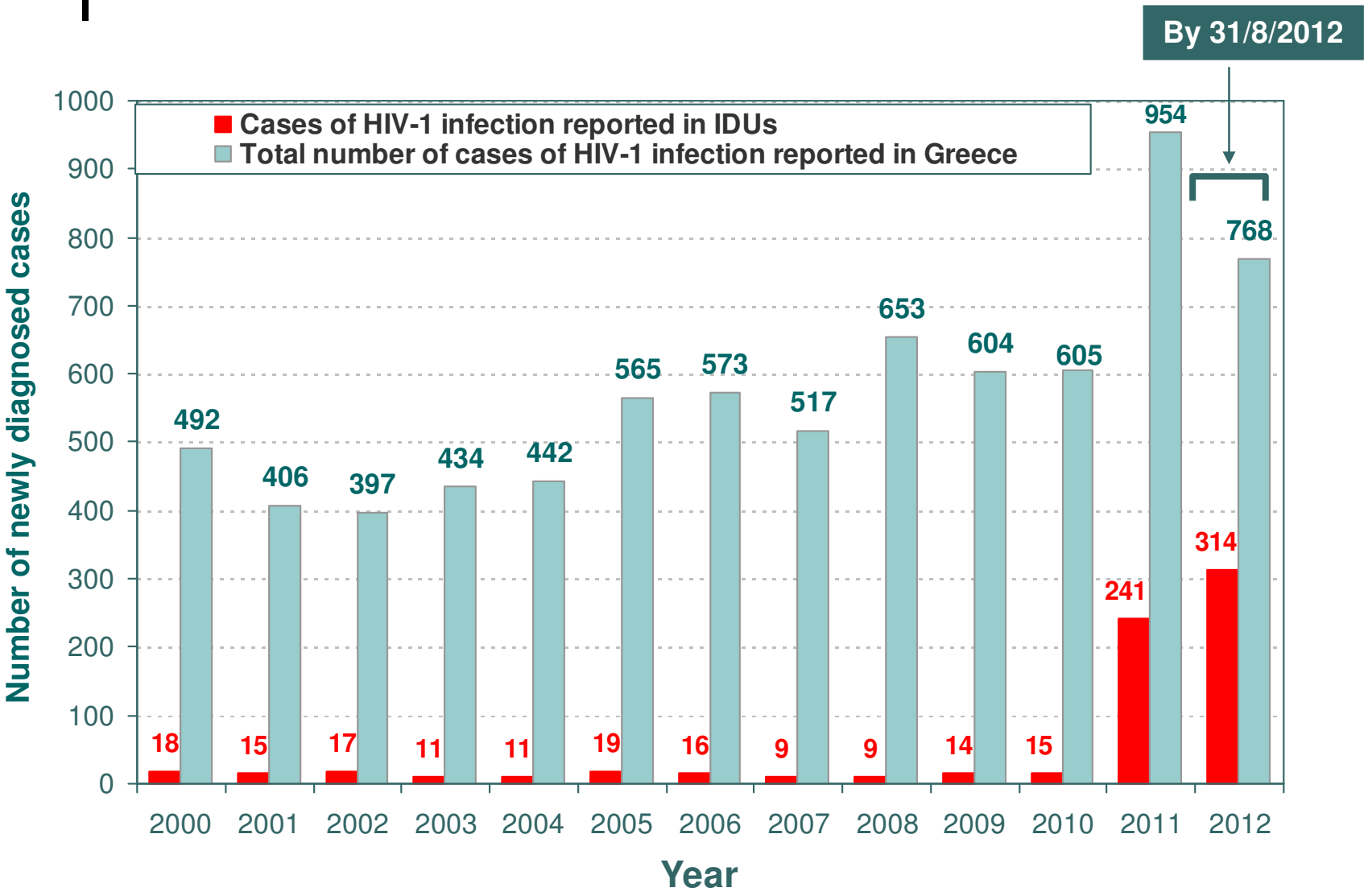
Article published on 8 September 2011

Conclusions from these preliminary data

- Up to 2009, clustered HIV-1 transmission among IDUs was rare, suggesting that sexual transmission was prevailing
- A large proportion (96%) of HIV-1 sequences from newly diagnosed IDUs fall within phylogenetic clusters, suggesting parenteral transmission with contaminated needles, syringes or other equipment.
- HIV-1 sequences originated from diverse places outside Greece supporting the potential role of immigrants in the initiation of this outbreak.

Paraskevis D et al. Eurosurveillance 2011

Newly diagnosed cases of HIV-1 infections reported in Greece, 1/1/2000-31/8/2012



Economic recession and emergence of an HIV-1 outbreak in IDUs in Athens Metropolitan Area: a longitudinal study

Paraskevis D[1] PhD, Nikolopoulos G[2] PhD, Fotiou A[3] MSc, Tsiara C[2] BSc, Paraskeva D[2] MD PhD, Sypsa V[1] PhD, Lazanas M[4] MD PhD, Gargalianos P[5] MD PhD, Psichogiou M [1,6] MD PhD, Prof Skoutelis A[7] MD PhD, Wiessing L[8] PhD, Friedman SR[9] PhD, Prof D. C. des Jarlais[10] PhD, Terzidou M[3] PhD, Kremastinou J[2] MD PhD, Malliori M[11] MD PhD and Prof Hatzakis A*[1] MD PhD

(Submitted)

Study design

- Phylodynamic and phylogeographic analyses were performed on HIV-1 sequences sampled from IDUs (n=282) collected from 1998 until August 2012.
- Analyses included sequences from the Hellenic HIV-1 Sequence Database of National Retrovirus Reference Center.
  - The database is comprised of sequences (PR and partial RT) from 2,327 anonymised HIV-1 infected individuals in Greece sampled during 1998-2009 and 2,715 representative HIV-1 sequences sampled globally.

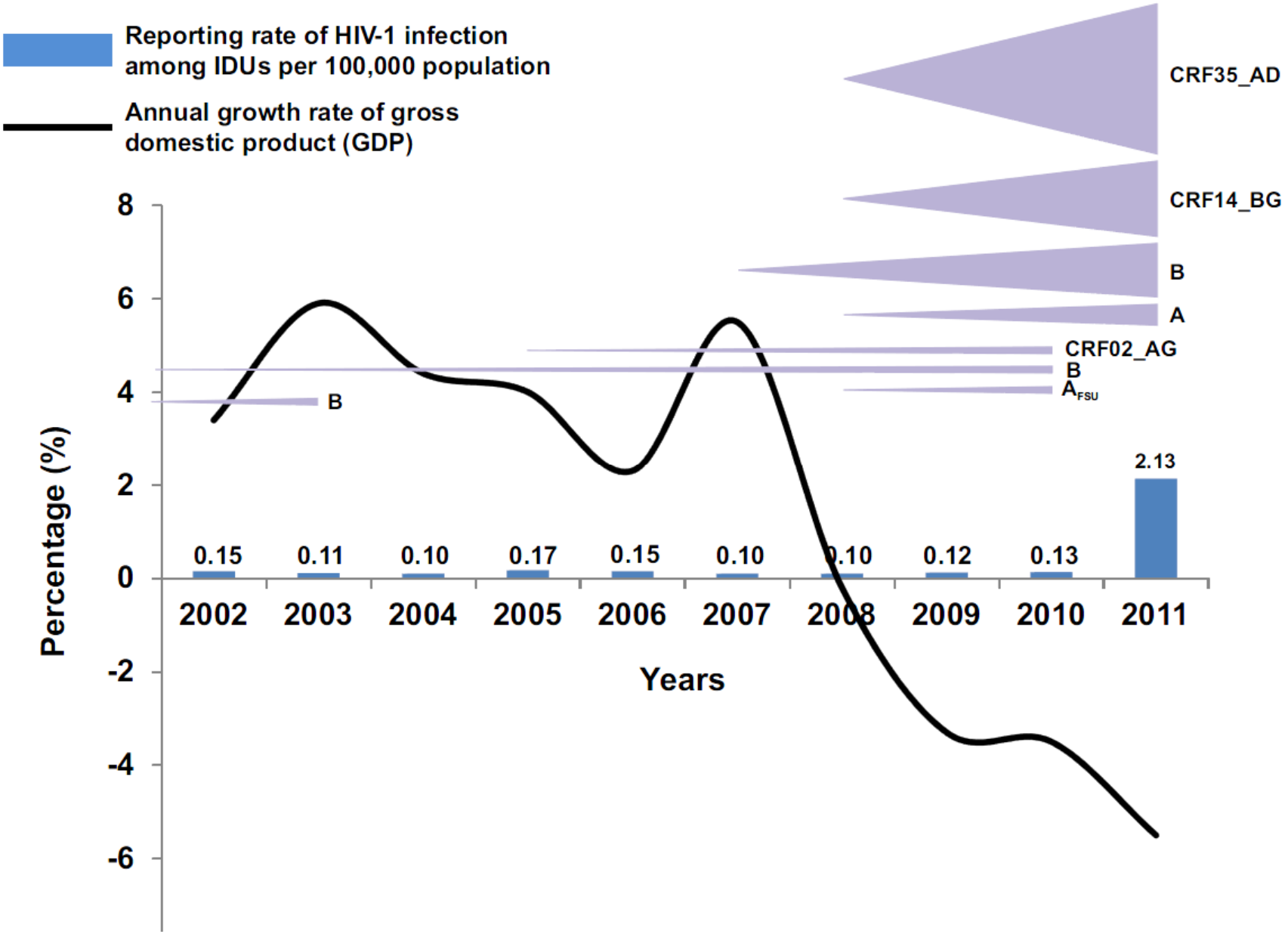
Patterns of HIV-1 spread

Phylogenetic clusters of IDUs HIV-1 sequences sampled over the years 1998-2012 in Greece

POPULATIONS	HIV SPREAD (n, %)		
	Clustered infections	**Non-clustered infections**	**Total**
IDUs 1998-2009	4 (5.3%)	72 (94.7%)	76
IDUs 2010	5 (41.3%)	7 (56.3%)	12
IDUs 2011	106 (94.6%)	6 (5.4%)	112
IDUs 8/2012	76 (92.7%)	6 (7.3%)	82

Description of clusters

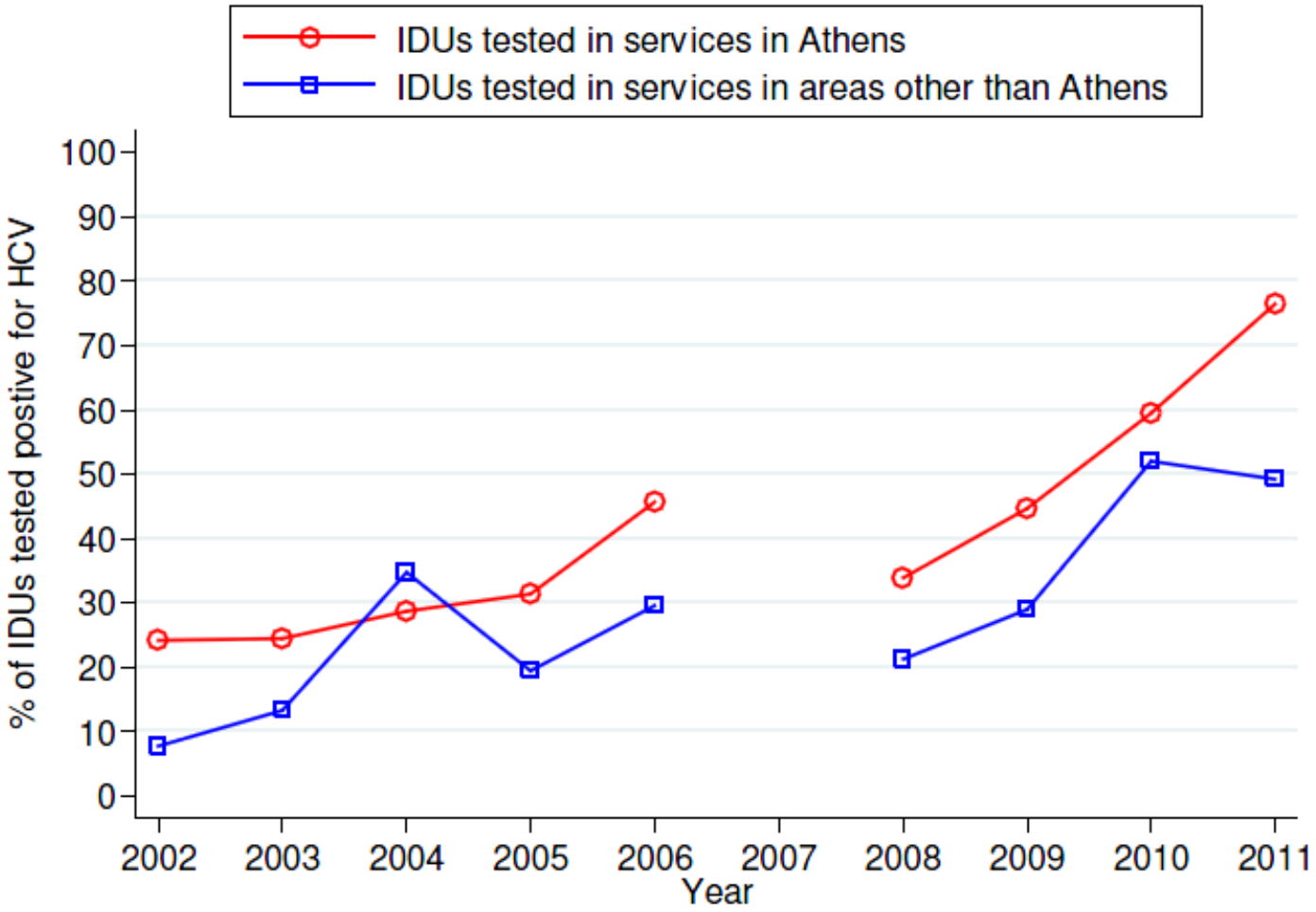
IDU Clusters	Number of IDUs within the cluster	Geographic origin	Nationality of potential founder	tMRCA (95% HPD)
CRF35_AD	58	Afghanistan/ Iran	Iran	2008 (2006-2010)
CRF14_BG	75	Portugal	Bulgaria	2008 (2006-2009)
Subtype B	34	Greece	Greece	2007 (2003-2009)
Subtype A	12	Greece	Greece	2008 (2005-2010)
A_{FSU}	2	FSU countries	NA	2008 (2006-2010)
CRF02_AG	2	NA	NA	2005 (2003-2005)
B	2	NA	NA	1996 (1986-2001)
B	2	NA	NA	1985 (1972-1995)


Reporting rate of HIV-1 infection among IDUs per 100,000 population
Annual growth rate of gross domestic product (GDP)
CRF35_AD
CRF14_BG
B
A
CRF02_AG
B
A FSU
B
2.13
0.15
0.11
0.10
0.17
0.15
0.10
0.10
0.12
0.13
8
6
4
2
0
-2
-4
-6
Percentage (%)
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Years

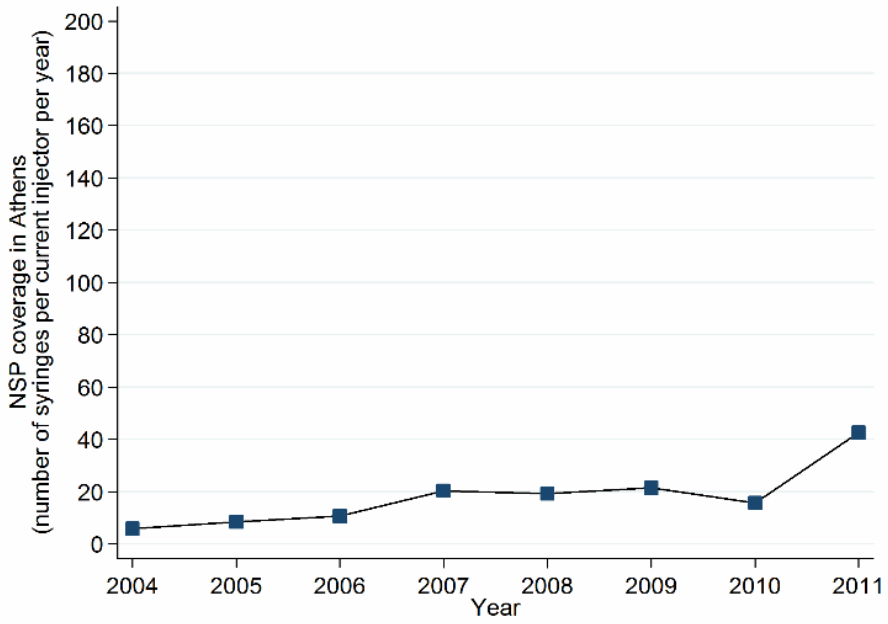
Anti-HCV in sentinel surveillance

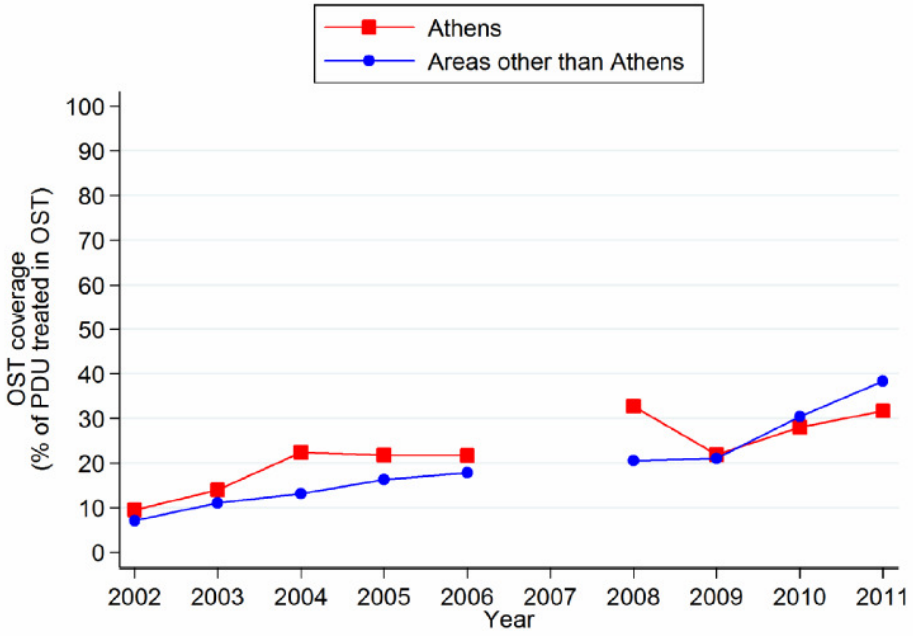
IDUs with injecting history of less than 2 years

(Greek Reitox Focal Point)



NSP & OST coverage in Greece
(Greek Reitox Focal Point)





Conclusions

- The distribution of HIV-1 subtypes in IDUs changed during 2010-2012. The majority (65%) of IDUs are infected by “new” HIV-1 strains.
- During 2011-2012, clustered HIV-1 transmission was dominant, suggesting parenteral transmission with contaminated needles, syringes or other equipment.
- The data support a potential role of migrant populations in the introduction of the outbreak.
- Five of the eight IDU transmission networks founded during 1985-2012, were founded and expanded during 2007-2012 → potential role of economic recession in the generation of Athens HIV-1 outbreak in IDUs

A Seek-Test-Treat-Retain (STTR) intervention to decrease HIV/AIDS transmission among IDUs in Athens metropolitan area:"Aristotle" Programme

- **Principal Investigator: A. Hatzakis[1]**
- **Investigators: V. Sypsa, D. Paraskevis[1], G. Nikolopoulos[2], T. Kremastinou[2], M. Malliori[3]**
- **Advisory Board: S. Friedman[4], L. Wiessing[5], M. Van de Laar[6], K. Gazgalidis[3], M. Donoghoe[7], D. Des Jarlais[8], D, Heckathorn[9]**

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[5] European Monitoring Centre for Drugs and Drug Addiction (EMCDDA)
[6] European Center for Disease Prevention & Control (ECDC)
[7] WHO-Europe
[8] Beth Israel Medical Centre, New York, USA
[9] Cornell University New York, USA

University of Athens

Organisation Against Drugs

NSRF 2007-2013 programme for development

“Aristotle” Programme

Aims of the programme:

- To screen for anti-HIV IDUs in Athens Metropolitan Area.
- To provide the WHO/ UNODC/ UNAIDS prevention, treatment and care package.
- To decrease the incidence of HIV-1 among IDUs.

Secondary aims include:

- To provide an estimate of HIV prevalence among IDUs during the course of the study.
- To describe phylogenetic and social networks.
- To increase linkage and retention to care of IDUs

Seropositive participants are referred to ARV treatment
and have priority to enter OST programs

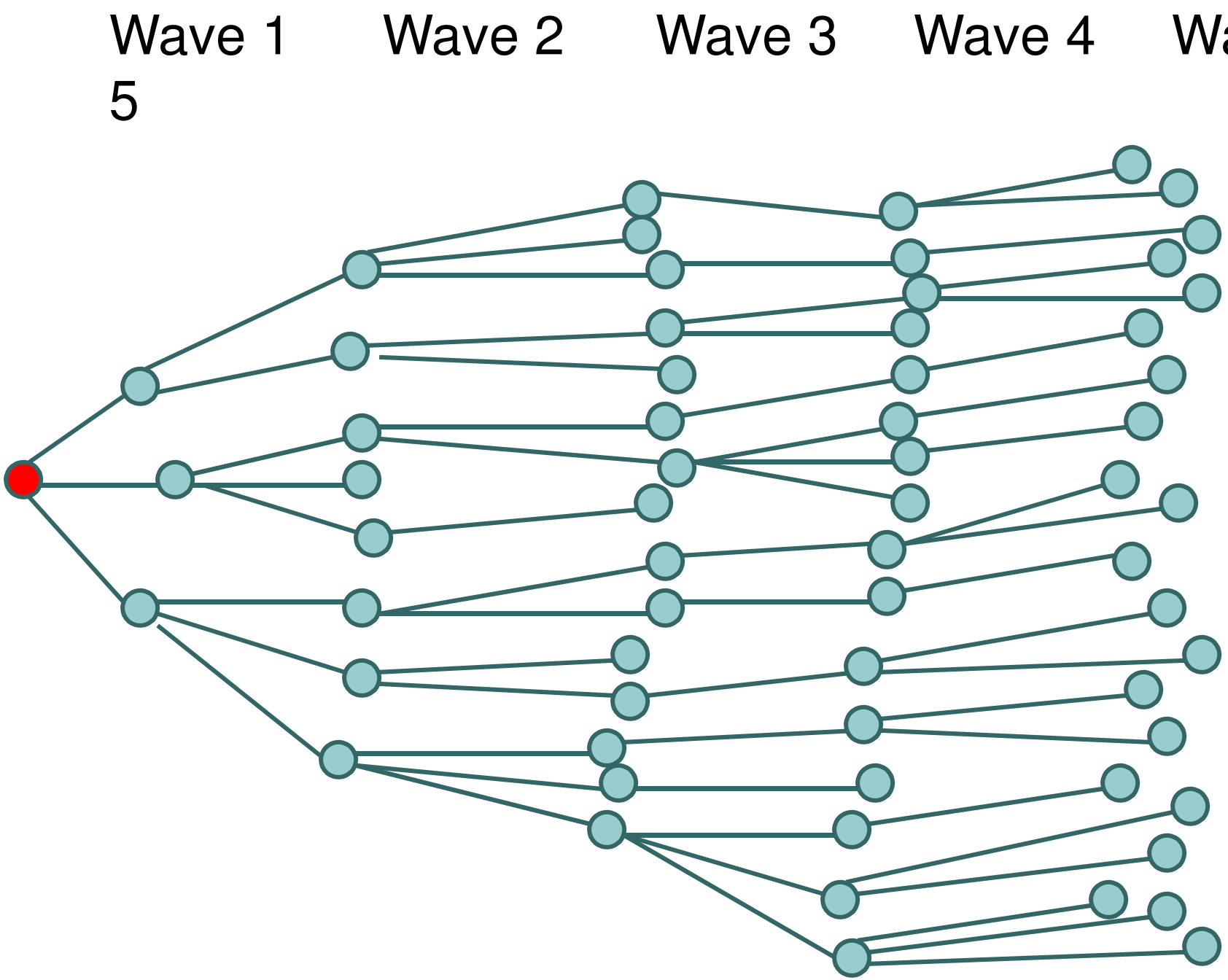
Sample selection: Respondent-driven sampling (RDS)

- RDS uses a coupon referral scheme that allows individuals to draw from their existing social networks to identify potential recruits who then present themselves to the study site.

- Implementation begins with a limited number of initial recruits ("seeds“) → Seeds are asked to recruit three other people they know. Chains of recruits are thus accrued that can penetrate beyond the social network of the seed who initiated the chain.

- Participants receive incentives for participating in the program (primary incentives) as well as for recruiting others (secondary incentives)

Final sample: Representative of the population under study – Independent of seeds


Wave 1
Wave 2
Wave 3
Wave 4
Wave 5

RDS in “ARISTOTLE”

- Recruitment target is 7,000 IDUs in 5 rounds within 18 months.
- In each round, there will be 10-15 seeds and a sample of approximately 1400 IDUs.
- IDUs receive 5 € for their participation & 3 € for each IDU they recruit (up to 3 recruits)
- The participation of migrant IDUs is encouraged through cultural mediators

Participants

Seeds:

- Non-randomly selected IDUs (selected by members of the study staff who are experienced in outreach programs of the Organisation Against Drugs).
- The selection is based on the basis of diversity concerning gender, age, ethnicity and HIV status.

Eligibility criteria

Persons who:

- Have a valid coupon
- Have injected drugs in the past 12 months
- Live in the area of Athens
- ≥18 years old

RDS site & staff

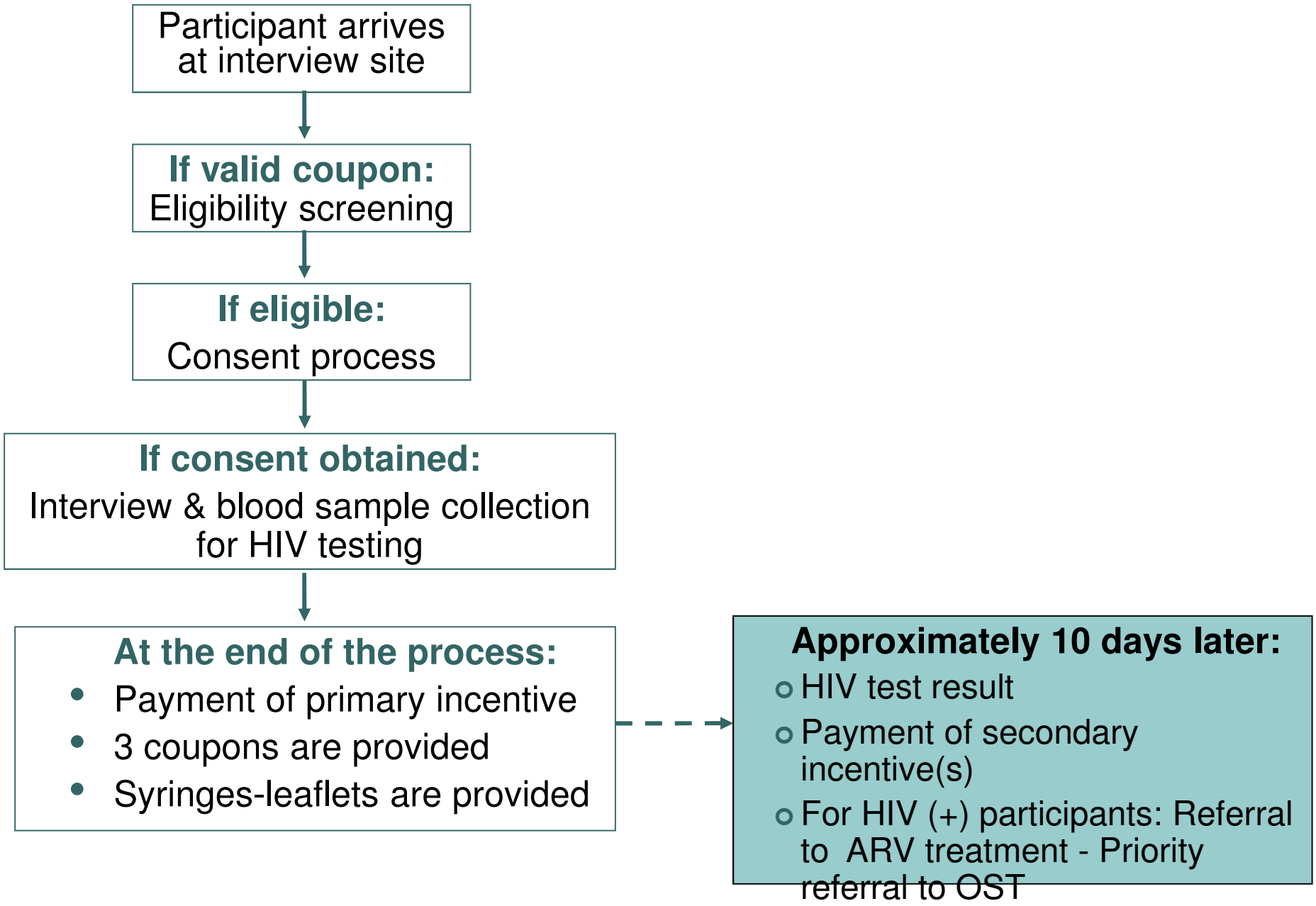
- **Site:**

  A building of the Organisation Against Drugs located in the centre of Athens

- **Staff:**

  Ex-IDUs, social workers, phsychologists, cultural mediators, one doctor – some of them with experience in outreach programmes

  - Full time: 8 persons
  - Part time: 5 persons
  - Volunteers from NGOs


Participant arrives at interview site
If valid coupon:
Eligibility screening
If eligible:
Consent process
If consent obtained:
Interview & blood sample collection for HIV testing
At the end of the process:
Payment of primary incentive
3 coupons are provided
Syringes-leaflets are provided
Approximately 10 days later:
HIV test result
Payment of secondary incentive(s)
For HIV (+) participants: Referral to ARV treatment - Priority referral to OST

Questionnaire

The questionnaire of the National HIV Behavioral Surveillance System (NHBS)-IDU3 was used as the basis for the core questionnaire of ARISTOTLE

- It has been modified as appropriate in order to be used in Greek IDUs

- It includes questions on:
  - Network size
  - Sexual behavior
  - Drug use
  - Alcohol use
  - Alcohol and drug treatment
  - HIV testing experience
  - Health condition
  - Assessment of prevention activities

Laboratory testing

Collected blood samples are transported on a daily basis to the National Retrovirus Reference Centre for testing.

- HIV tests are performed with an EIA anti-HIV-1/2
- HIV confirmation by Western Blot
- Molecular HIV-1 typing conducted with deep-sequencing and phylogenetic analysis will be used in order to identify transmission networks.

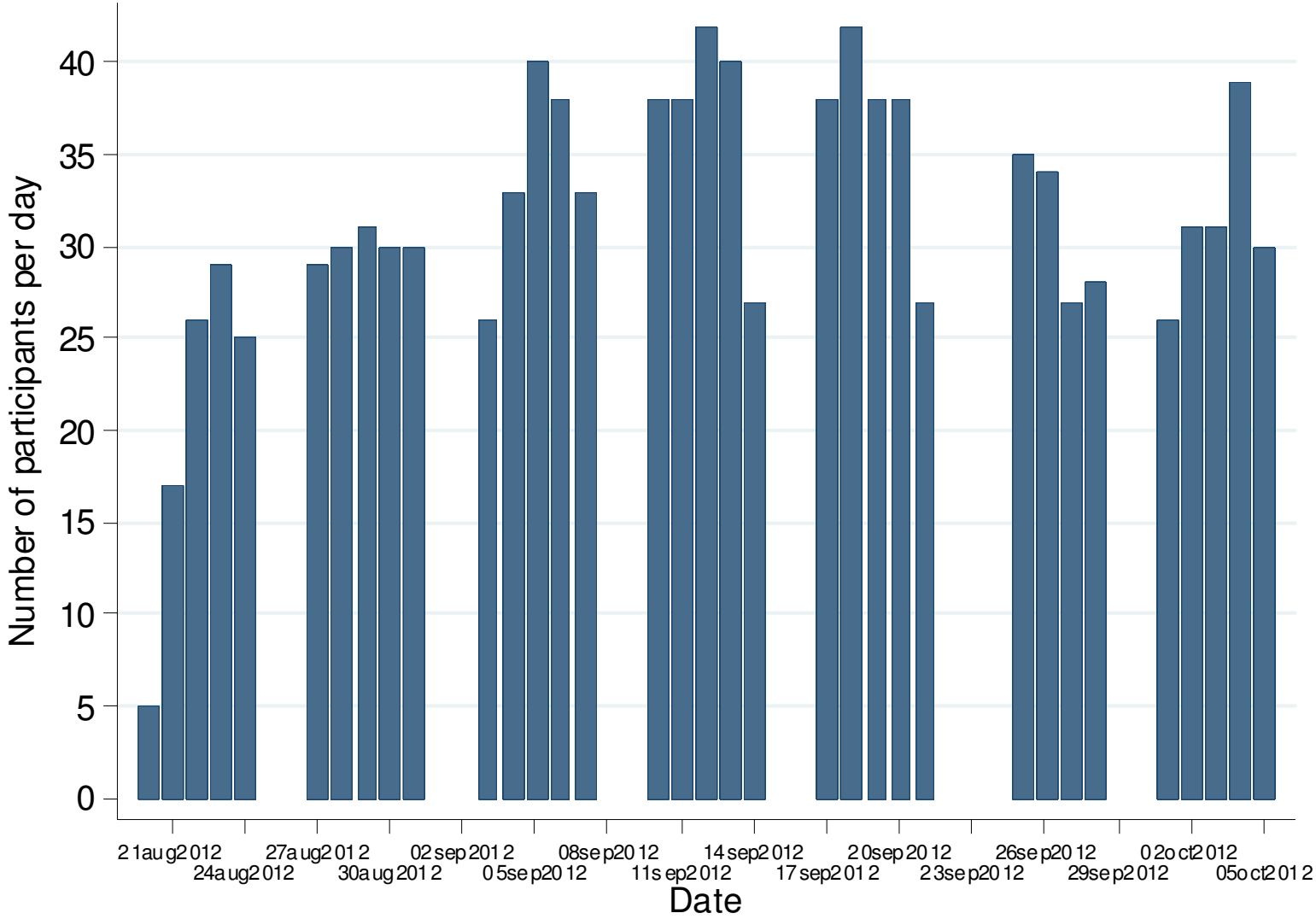
Analysis of the first 1,000 recruits

- 10 seeds enrolled to the program
- Yield of seeds:

Seed	Date of entry to the program	Total referrals arising from this seed	Maximum wave achieved[1]
1	20Aug2012	375	9
2	20Aug2012	14	7
3	20Aug2012	277	9
4	21Aug2012	146	9
5	21Aug2012	122	9
6	22Aug2012	52	9
7	3Sep2012	3	2
8	7Sep2012	1	1
9	10Sep2012	0	-
10	17Sep2012	0	-

[1] The maximum number of waves is 9

Number of participants per day

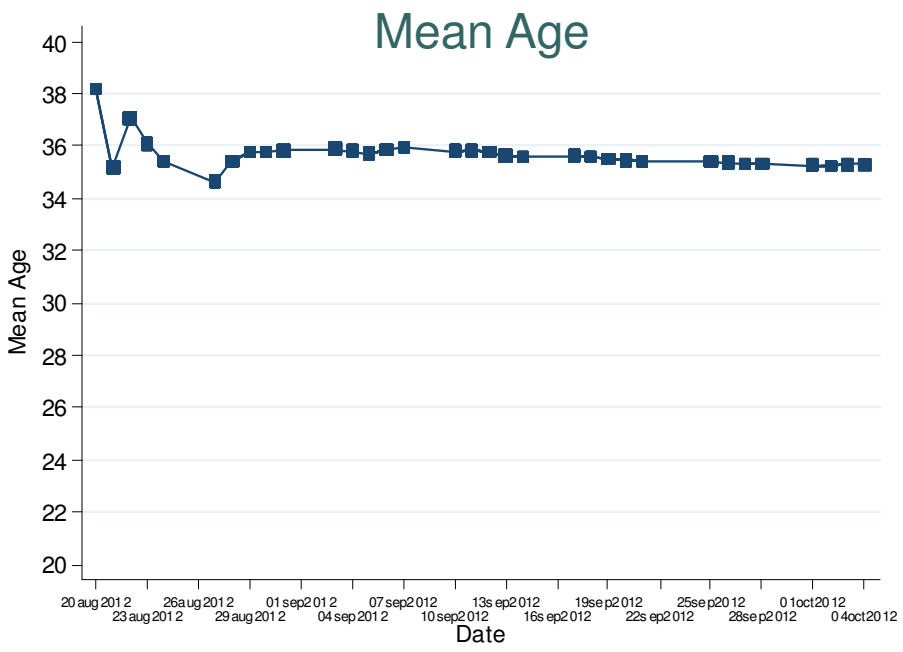


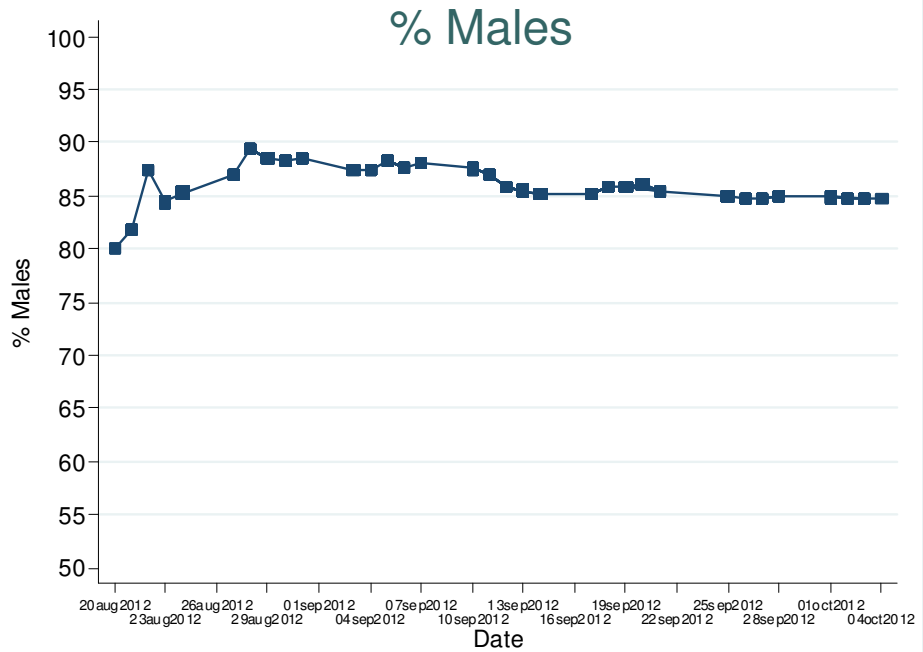
RDS and equilibrium

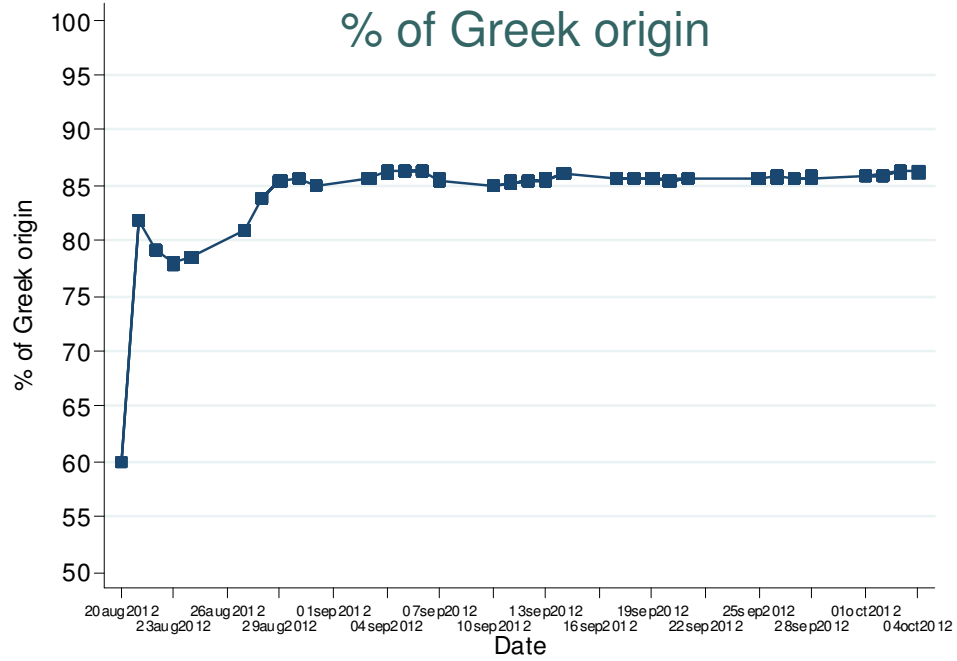
- **Equilibrium:** the point at which the sample characteristics no longer significantly change, no matter how many more people are recruited into the study

- Equilibrium indicates that the **final sample is not biased by the purposive selection of seeds.**

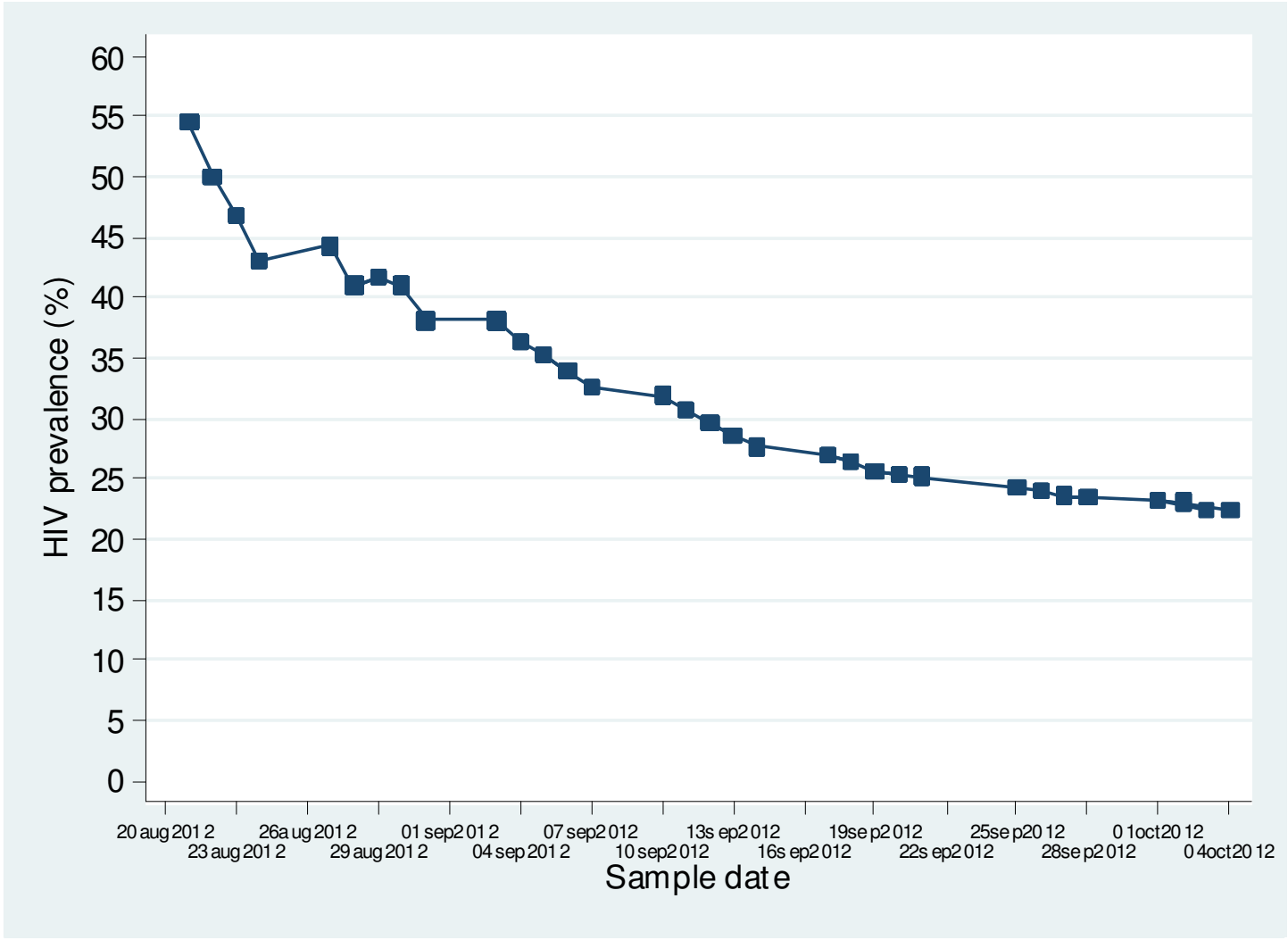
- Equilibrium in this program is assessed on:
  - Age
  - Gender
  - Ethnicity
  - HIV prevalence


Mean Age
Mean Age
40
38
36
34
32
30
28
26
24
22
20
20 aug 2012
23 aug 2012
26 aug 2012
29 aug 2012
01 sep 2012
04 sep 2012
07 sep 2012
10 sep 2012
13 sep 2012
16 sep 2012
19 sep 2012
22 sep 2012
25 sep 2012
28 sep 2012
01 oct 2012
04 oct 2012
Date


% Males
% Males
100
95
90
85
80
75
70
65
60
55
50
20 aug 2012
23 aug 2012
26 aug 2012
29 aug 2012
01 sep 2012
04 sep 2012
07 sep 2012
10 sep 2012
13 sep 2012
16 sep 2012
19 sep 2012
22 sep 2012
25 sep 2012
28 sep 2012
01 oct 2012
04 oct 2012
Date


% of Greek origin
% of Greek origin
100
95
90
85
80
75
70
65
60
55
50
20 aug 2012
23 aug 2012
26 aug 2012
29 aug 2012
01 sep 2012
04 sep 2012
07 sep 2012
10 sep 2012
13 sep 2012
16 sep 2012
19 sep 2012
22 sep 2012
25 sep 2012
28 sep 2012
01 oct 2012
04 oct 2012
Date

Equilibrium & HIV prevalence



Demographic characteristics (N=1,000 participants)

Age	
mean (SD)	35.3 (7.9)
range	18-62
Gender, n(%)	
Male	848 (84.8)
Female	152 (15.2)
Country of origin, n(%)	
Greece	862 (86.2)
Europe (other)	41 (4.1)
Afghanistan/Iran	46 (4.6)
Middle East (other)	17 (1.7)
Africa	27 (2.7)
Other	7 (0.7)

Prevalence of antibodies to HIV-1 (by EIA)

Anti-HIV	N (%)
+	225 (22.5)
-	775 (77.5)
Total	1000 (100.0)

According to the Hellenic Centre for Disease Control and Prevention, out of the first 108 HIV(+) persons identified by “Aristotle” programme:

- 39.8% (N=43) were known cases previously reported
- The remaining 60.2% (N=65) were new cases

HIV prevalence according to age and gender

	Anti-HIV		p
	(+) N=225	(-) N=775	
Gender, n(%)			0.800
Male	192 (22.6)	656 (77.4)	
Female	33 (21.7)	119 (78.3)	
Age			
Mean (SD)	34.2 (7.3)	35.6 (8.0)	0.015

HIV prevalence according to country of origin

	Anti-HIV (+) n(%)	OR of anti-HIV(+)	p
Country of origin			
Greece	189 (21.9)	Reference category	-
Europe (other)	11 (26.8)	1.31	0.461
Afghanistan/Iran	**16 (34.8)**	**1.89**	**0.045**
Middle East (other)	4 (23.5)	1.10	0.874
Africa	5 (18.5)	0.89	0.674

Referrals to OST & ARV treatment

- One psychologist and 2 social workers work on referrals and counseling
- Two representatives from the **NGO "Positive Voice"** are established in the same building and assist in the counseling of seropositive participants
- Referral of **seropositive migrants without documents** is done in collaboration with the **NGO "Praxis"** and is assisted by the cultural mediators of "ARISTOTLE"

Final points

- The recruitment process and the acceptability of the programme by the target population of IDUS is highly satisfactory
- Until now, a large number of HIV infected IDUs has been identified – The challenge for improving linkage and retention to care (ARV, OST) is dealt with by utilizing dedicated linkage staff and involving NGOs (in particular for undocumented migrants).
- The large sample size of “Aristotle” will allow the penetration into the social network of the target population
- The analysis of the questionnaires is anticipated to provide insight into the behaviour of Greek IDUs

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- K. Hatzimorakis
- S. Hanos
- G. Stavrou
- P. Antonopoulos
- S. Matis
- S. Politis
- Z. Kostopoulos