STRATEGIES FOR MATERNO-FETAL TRANSMISSION OF HIV, HIV AND HBV COINFECTIONS IN CONSTANTA - ROMANIA

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Background

- **Romania was the first country in Central and Eastern Europe that announced the diagnosis of an AIDS case in 1985.**

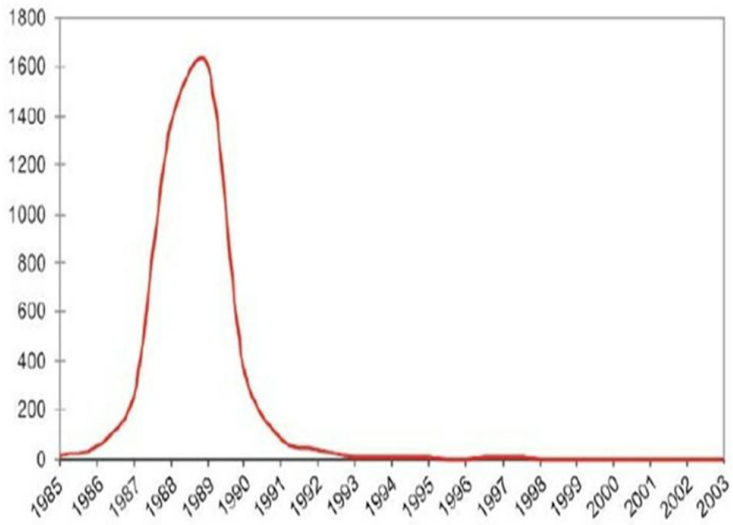
- Unlike the infections in other Eastern and Central European Countries, HIV infection/ AIDS in Romania is a different phenomenon.

- Constanta was one of the most affected counties by HIV from Romania.

Romanian particularities of HIV - AIDS epidemic

AIDS epidemic in children

Breakdown of AIDS cases among children by „nosocomial" mode of transmission and year of birth (1985 – 2003)



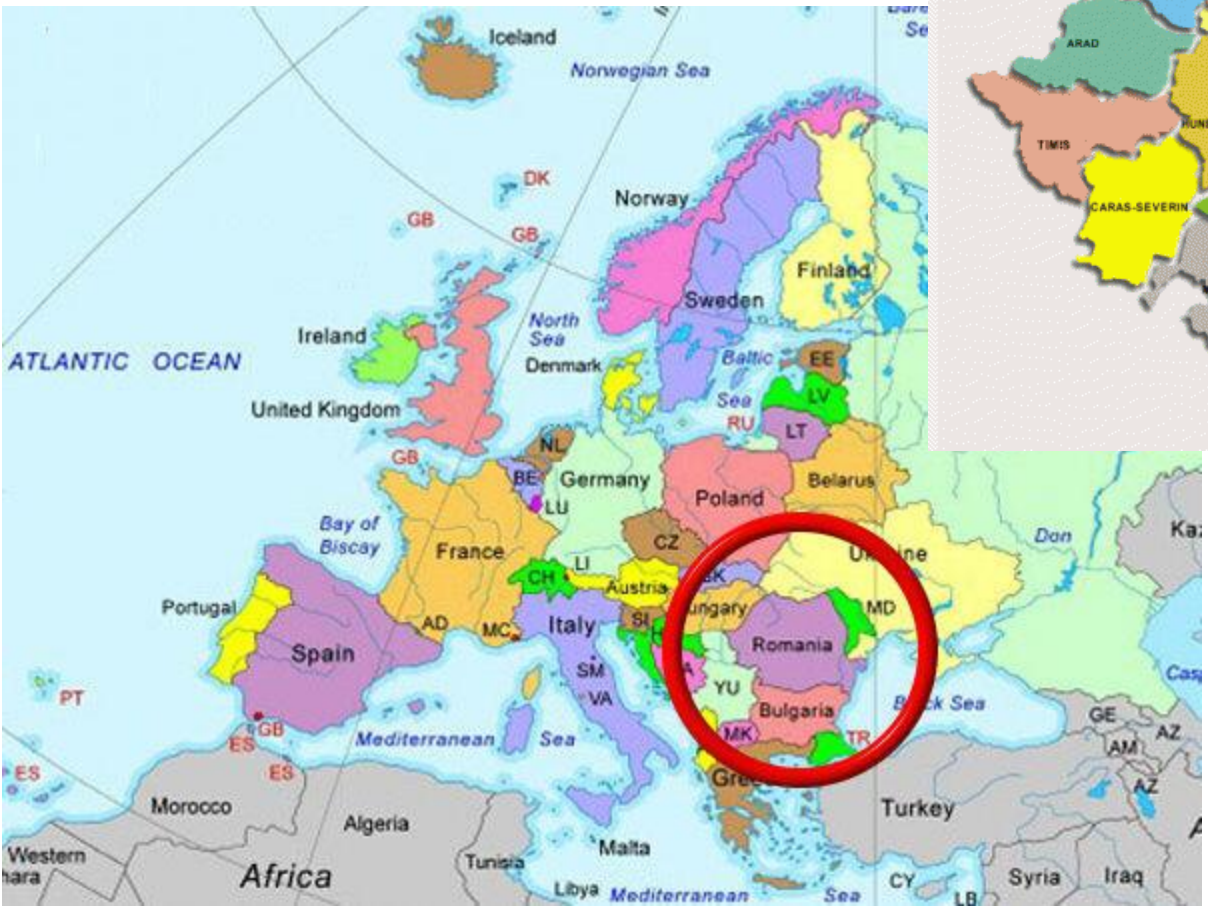
Particular aspects

- In Romania, epidemiology of HIV transmission is unique worldwide: at the beginning (1985), HIV had a nosocomial transmission in children, especially by unscreened blood.
- The specificity of the epidemic consists of a high rate of HIV incidence in children, infected after 1980, the maximum number of the patients having been recorded in the beginning of the 1990.

Coordination of counties by the Regional HIV/AIDS Monitoring and Evaluation Centers in Romania

REGIONAL CENTERS	REGIONAL CENTERS
• **INBI "PROF.DR. MATEI BALŞ" Regional Centre**	• **BRAŞOV Regional Centre**
• **VICTOR BABEŞ BUCUREŞTI Regional Centre**	• **CLUJ Regional Centre**
• **IAŞI Regional Centre**	• **TIMIŞOARA Regional Centre**
• **CONSTANŢA Regional Centre**	• **TÂRGU MUREŞ Regional Centre**
	• **CRAIOVA Regional Centre**

Romania – Central- Eastern Europe



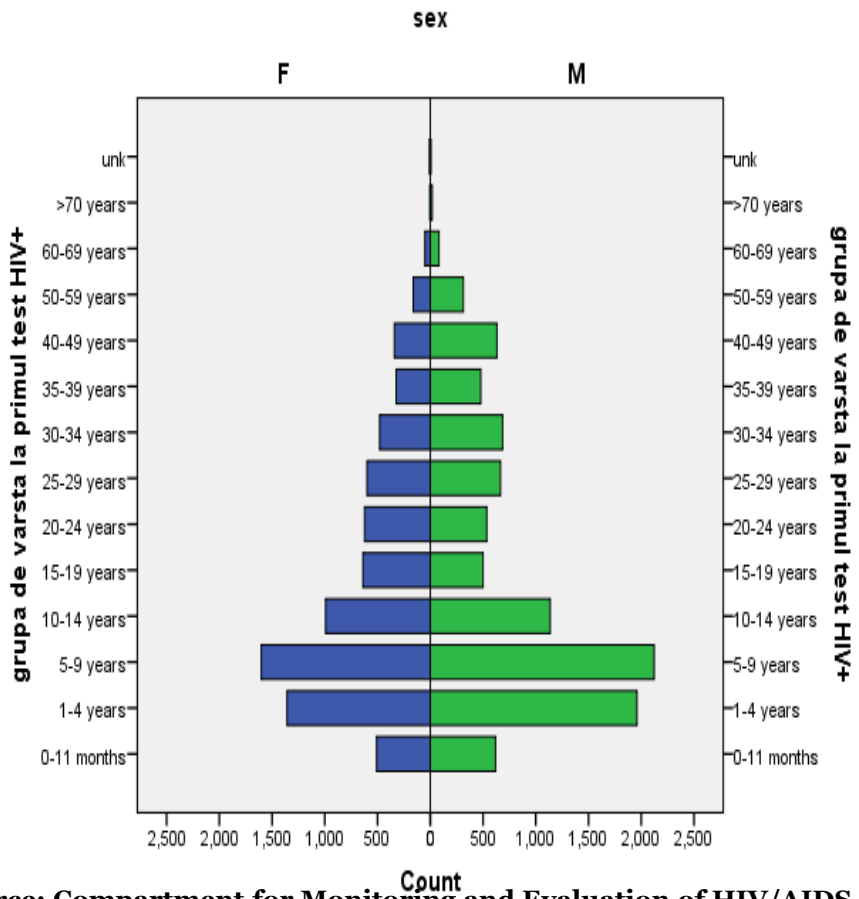
Ministry of Health, Romania
National Institute for Infectious Diseases "PROF. DR. MATEI BALŞ" BUCHAREST

TOTAL HIV/AIDS (CUMULATIVE 1985-2014) of which:	19.696
Paediatric HIV/AIDS cases (0-14 years at the time of diagnosis)	9.958
HIV/AIDS cases in adults (> 14 years at the time of diagnosis)	9.738
Total number of AIDS related deaths (1985-2014)	*6.473*
Lost from records children+adults	620
Number of living patients	*12.603*
Total number of AIDS cases (cumulative 1985-2014)	13.643
Paediatric AIDS Cases (0-14 years at time of diagnostic)	8.086
AIDS cases in adults (> 14 years at time of diagnostic)	5.557
Total number of HIV cases (cumulative 1992-2014)	*6.053*
Paediatric HIV cases (0-14 years at time of diagnostic)	*1.872*
HIV cases in adults (> 14 years at time of diagnostic)	*4.181*
New HIV/AIDS cases detected between: 01.01-30.06.2014	*319*
New notified HIV cases	*177*
New notified AIDS cases	*142*
Number of AIDS related deaths registered between 01.01-30.06.2014 through the HIV/AIDS confirmation charts	*86*

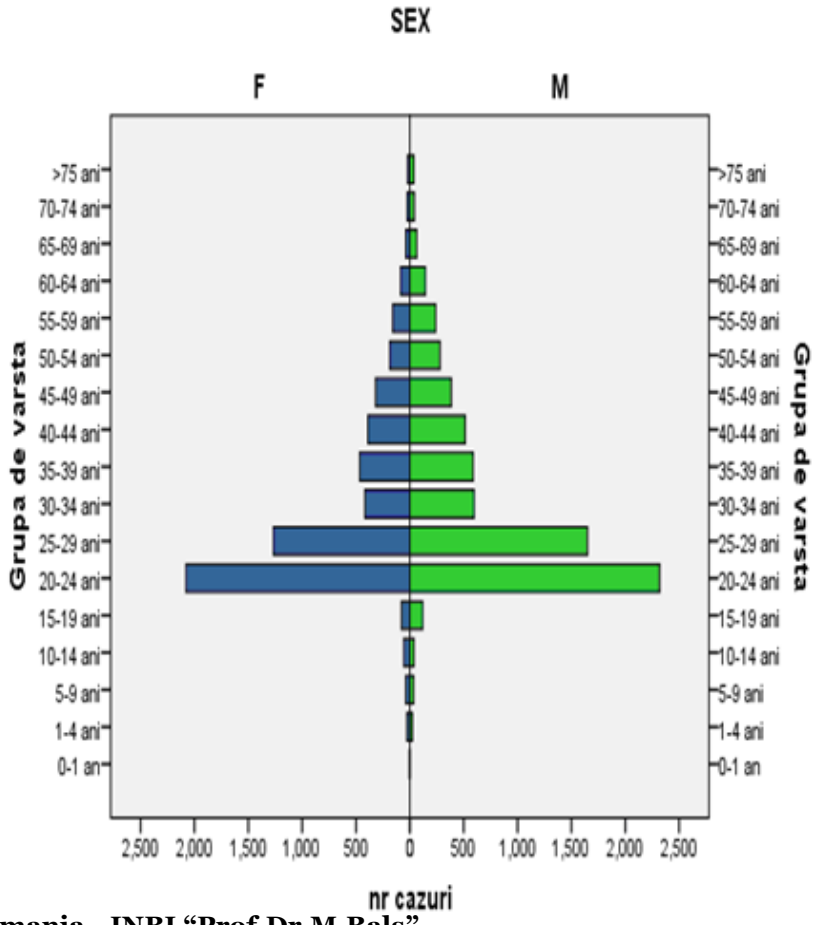
Source: Compartment for Monitoring and Evaluation of HIV/AIDS in Romania - INBI "Prof.Dr.M.Balş"

Distribution by ages
31st December 2013

Age at the time of detection/notification
Cumulative number 1985-2013



Age distribution of living patients



Source: Compartment for Monitoring and Evaluation of HIV/AIDS in Romania - INBI "Prof.Dr.M.Balş"

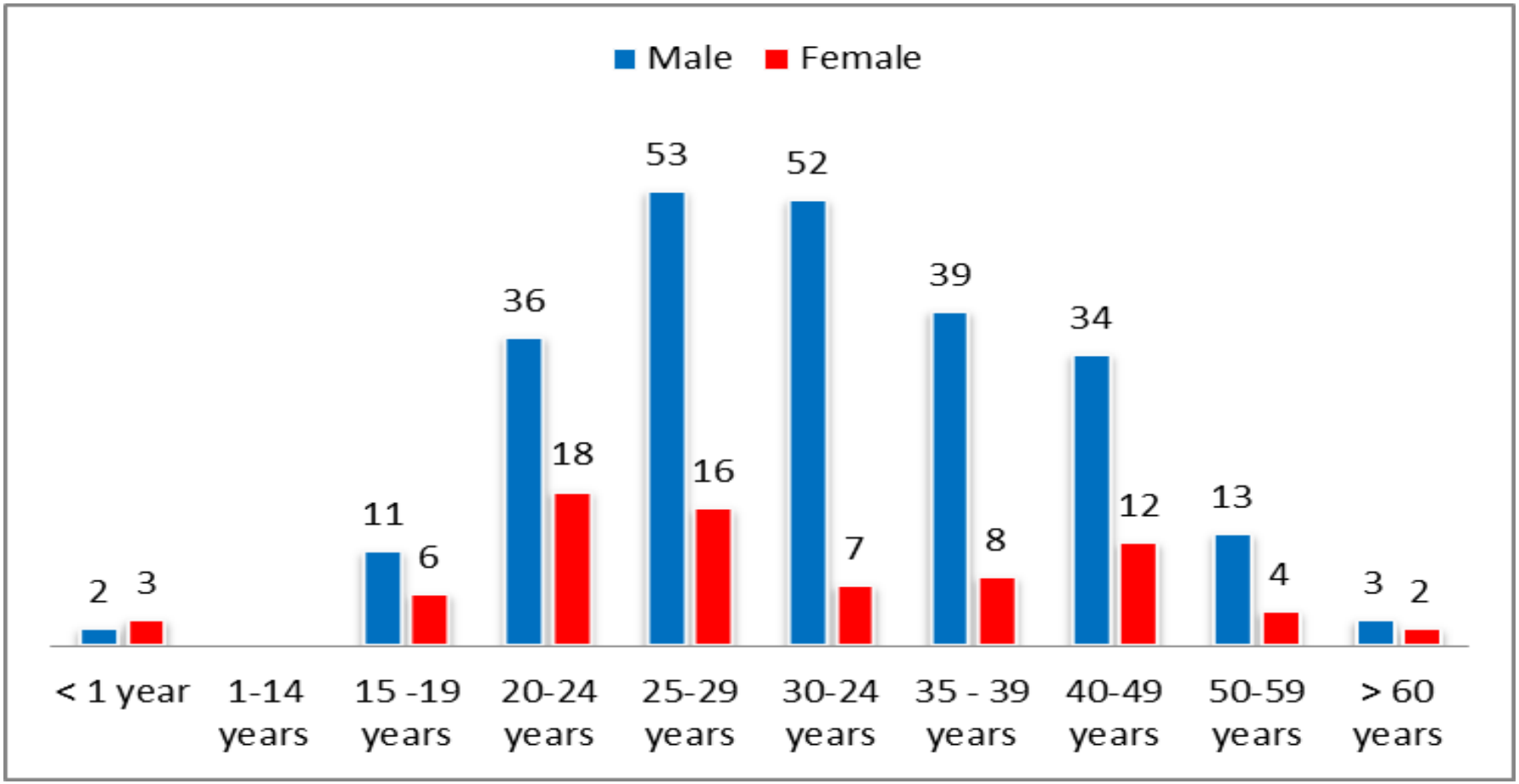
Romania – Current tendencies of the HIV/AIDS infection

- The main way of transmission for adults – unsafe heterosexual contact - 48% of the new cases in 2013.
- A relevant increase for the IDU (33% in 2013 vs 3% in 2010).
- Increased proportion of the infections among the MSM group, from 11% (2010) to 14% in 2013.
- A decrease in the vertical transmission (MTC): 5% in 2010 → 3% in 2013.
- An overall increase of PLWHA (people living with HIV/AIDS) requiring specific medical services and ARV therapy.

Romania – Current tendencies of the HIV/AIDS infection

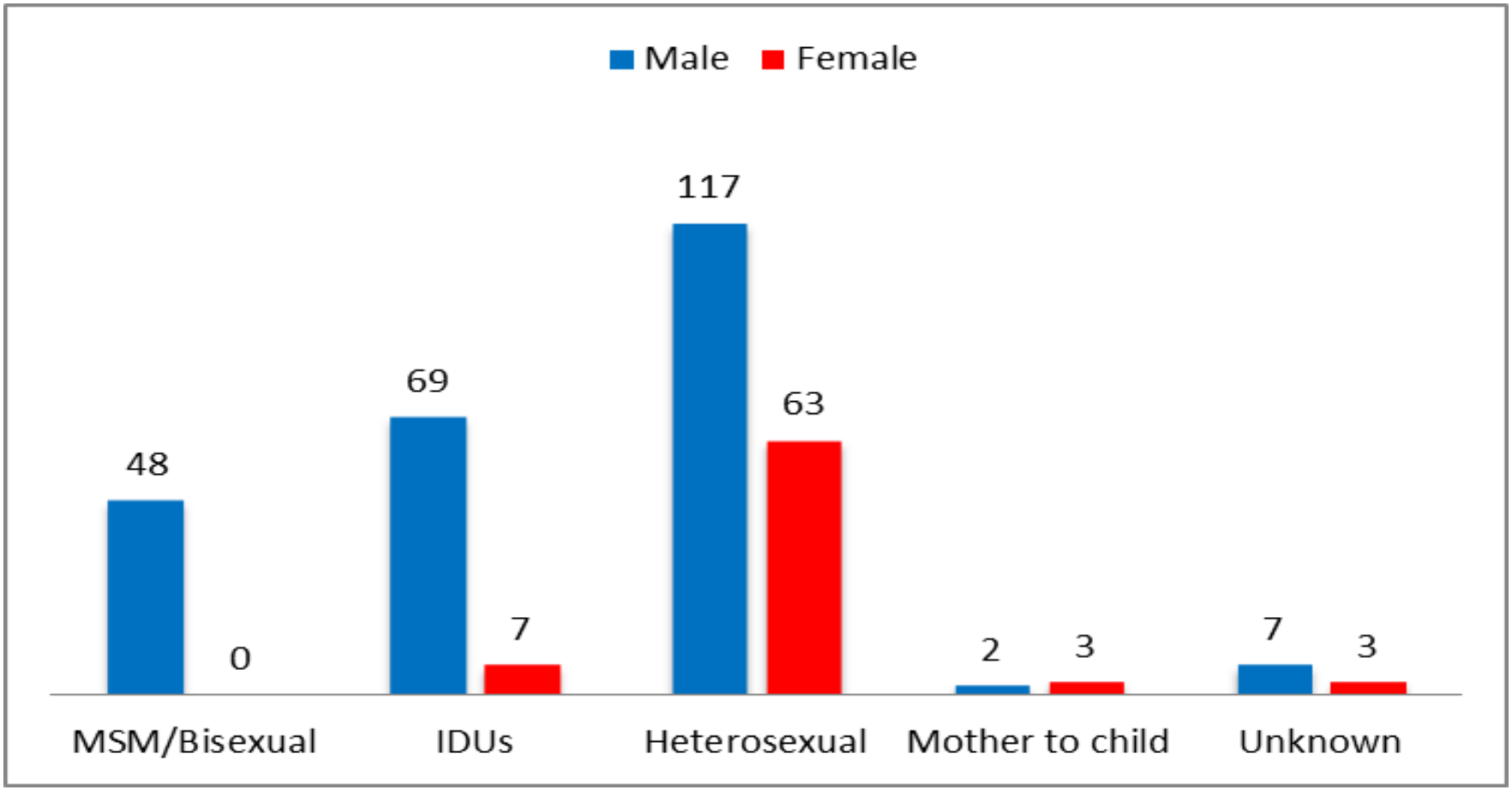
- Recent information released by UNAIDS ranks the number of PLWHA in Romania between 12 000-16 000 persons.
- The difference between the number of the diagnosed patients and the estimates is relatively small next to other Central and Eastern European countries.
- Due to the epidemiologic particularity, namely ***the long term survivals***, who experienced multiple therapeutic regimens, two major problems:
  - ARV resistance is major, with many implications in the design of potent therapeutic regimens;
  - ARV adherence in young adults infected in childhood

Distribution, by age and gender, of new HIV/AIDS cases, detected during January 1st - June 30th 2014



Source: Compartment for Monitoring and Evaluation of HIV/AIDS in Romania - INBI "Prof.Dr.M.Balş"

Distribution, by way of transmission, of new HIV/AIDS cases in 2014



Source: Compartment for Monitoring and Evaluation of HIV/AIDS in Romania - INBI "Prof.Dr.M.Balş"

HIV/HBC, HCV, STDs and TB co-infections in IDUs

Screened for	Number of patients with a positive test	%
HBs Ag	3	3.70%
VHC Ab	62	76.54%
HBs Ag + VHC Ab	7	8.64%
STDs (sexually transmitted diseases)	9	11.11%
TB co-infection	15	18.52%

Source: Compartment for Monitoring and Evaluation of HIV/AIDS in Romania - INBI "Prof.Dr.M.Balş"

Tendencies in routes of transmission in Romania 2007 - 2014

Route of transmission	31.12.2007	31.12.2008	31.12.2009	31.12.2010	31.12.2011	31.12.2012	31.12.2013	30.06.2014
Vertical	8 (2%)	7 (1%)	20 (4%)	25 (5%)	21 (3%)	21 (2.6%)	21 (2.64%)	5 (1.57%)
MSM (men who have sex with men)	14 (3%)	40 (8%)	44 (9%)	60 (11%)	95 (13%)	89 (10.8%)	88 (11.04%)	43 (13.48%)
IDU (injecting drug users)	4 (1%)	3 (1%)	7 (1.4%)	14 (3%)	131 (18%)	252 (30.6%)	233 (29.23%)	76 (23.82%)
MSM/IDU				1 (<0.5%)	5 (1%)	6 (1%)	5 (0.63%)	5 (1.57%)
Heterosexual	352 (79%)	397 (76%)	383 (77%)	399 (75%)	440 (61%)	414 (50%)	435 (54.58%)	180 (56.43%)
Unknown	67 (15%)	71 (14%)	43(8.6%)	32 (6%)	28 (4%)	39 (5%)	15 (1.88%)	10 (3.13%)
Total*	445	522	497	531	720	821	797	319

CONSTANȚA REGIONAL CENTRE

Introduction

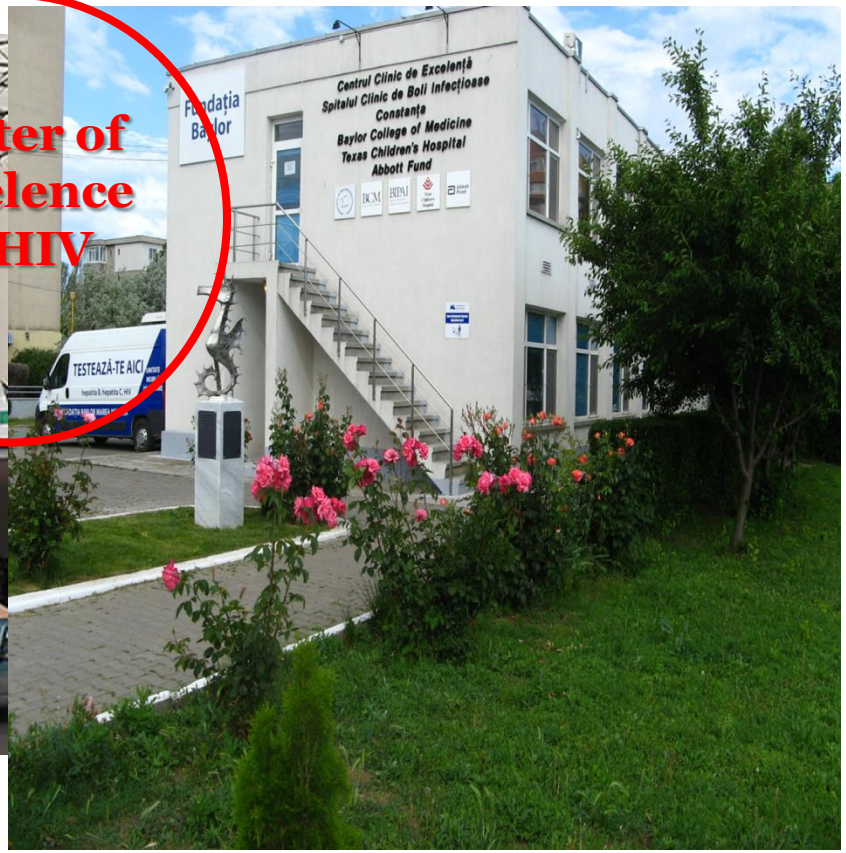
- In Constanta County in the last 14 years, we noticed an increasing number of children exposed to HIV or HIV and HBV through mother-to-child transmission.

Constanta Regional Center

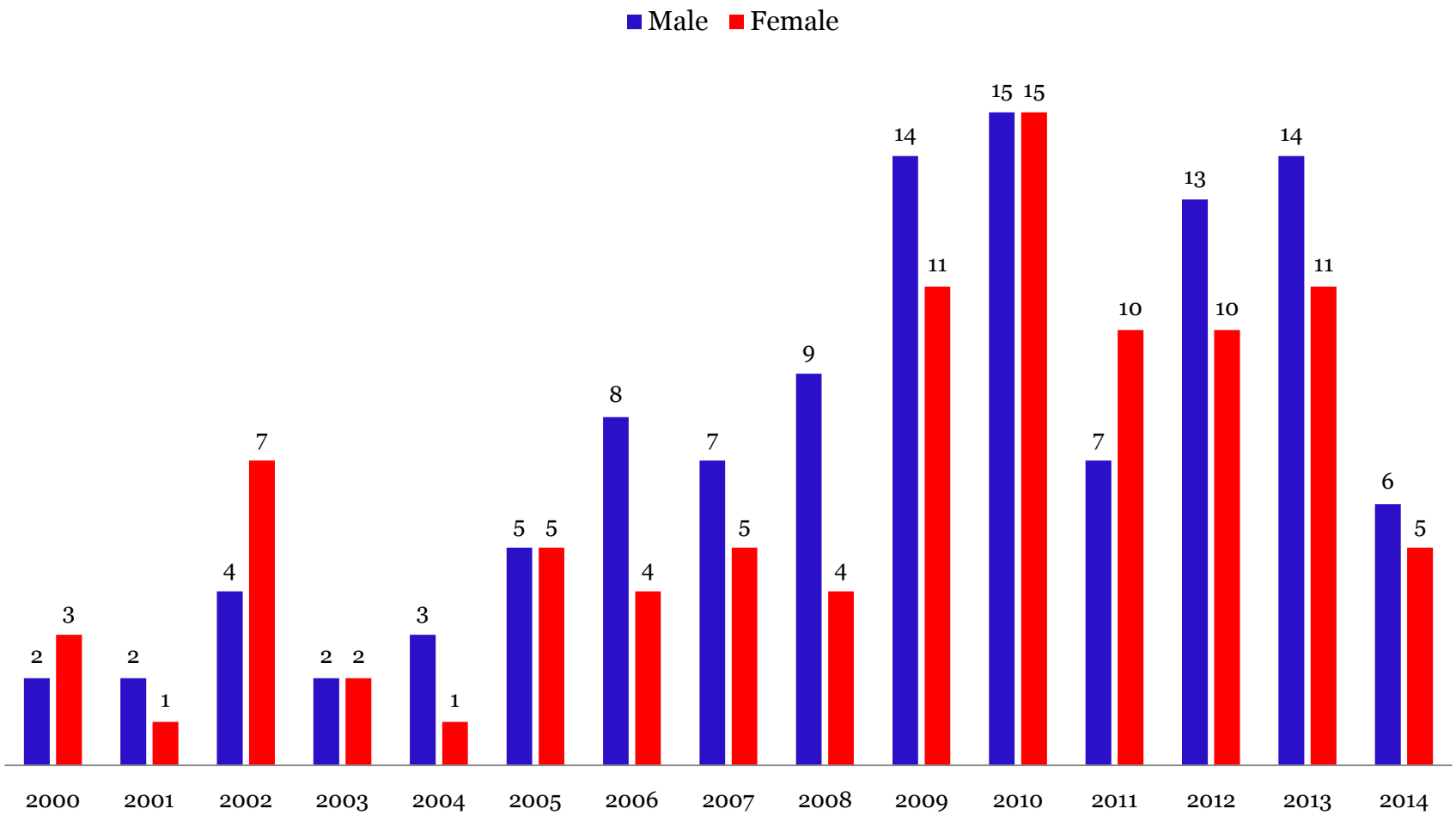
Constanta Clinical Infectious Diseases Hospital

Baylor Black Sea – NGO

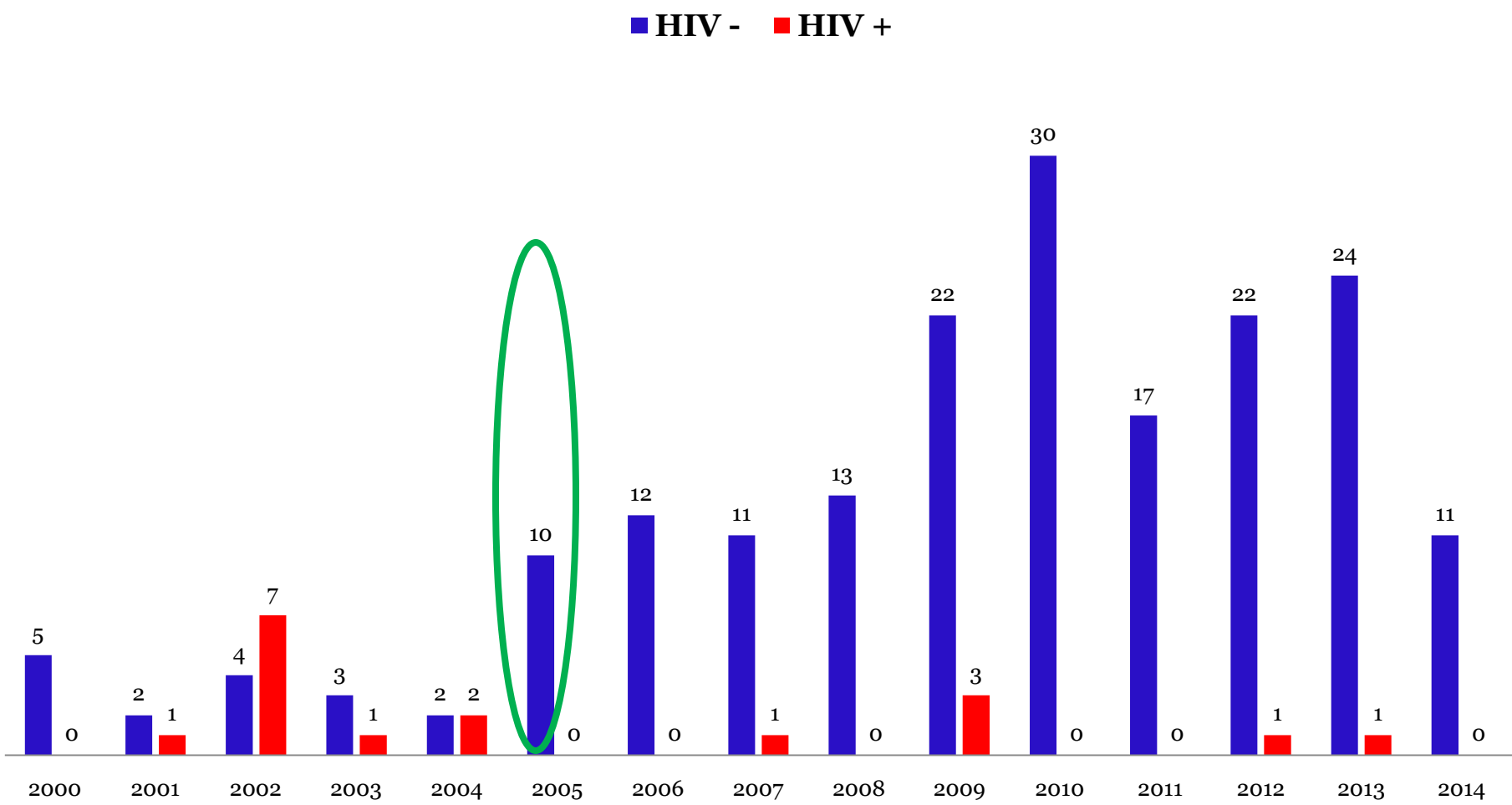
Center of Excelence in HIV



Evolution of children exposed to HIV



HIV status of children borne from HIV positive mothers



Objective

- To present our model of prevention for mother-to-child transmission (MTCT) of HIV and HIV and HBV coinfections over a period of 6 years and 6 months (1st January 2008 – 27th June 2014).

Material and method

- Our model of prevention and care regarding prophylaxis of MTCT is implemented and continuous improved for the last 14 years.
- We also performed a retrospective study about relevant parameters in new born and mothers:
  - duration and type of combined antiretroviral treatment (cART),
  - ELISA: HIV, HBsAg
  - HIV and HBV viral load (VL).
- Statistical analysis was performed using IBM SPSS Statistics 20 software.

Results

- Our model of care is based on three major aspects:
  - HIV screening in pregnant women;
  - delivery by C-section;
  - no breastfeeding;
  - careful monitoring of children by lab analysis and home care surveillance.

Clinical Infectious Diseases Hospital responsibilities

- Diagnosis of HIV (ELISA, Viral load, Western Bott) and counceling;
- Provide antiretroviral medication – National Programme;
- Specific clinical and laboratory monitorisation: CD4, HIV viral load, lipidic profile, coinfections etc.,
- Good collaboration with neonatology department and OBG department;

NGO Responsibilities

- Counseling and quick tests for HIV and HBV in pregnant women;
- Psiho-social assistance;
- Financial support in mothers with HIV and HBV coinfections – immunoglobulin for HBV
- Medication for some coinfections and antiretrovirals: Lopinavir/ritonavir for some of the children from Romanian Cohort
  - Baylor College of Medicine, Texas Children's Hospital, Abbot Fund
- Home visit to help women, children and all family:
  - Medical advise
  - Psiho-social advise
  - Adherence monitorisation: count pills, discussions

Results

- Over studied period 144 new born from 121 HIV+ mothers have been monitored.

- 7 mothers were with HIV and HBV coinfection but none of them transmitted any disease in their children.

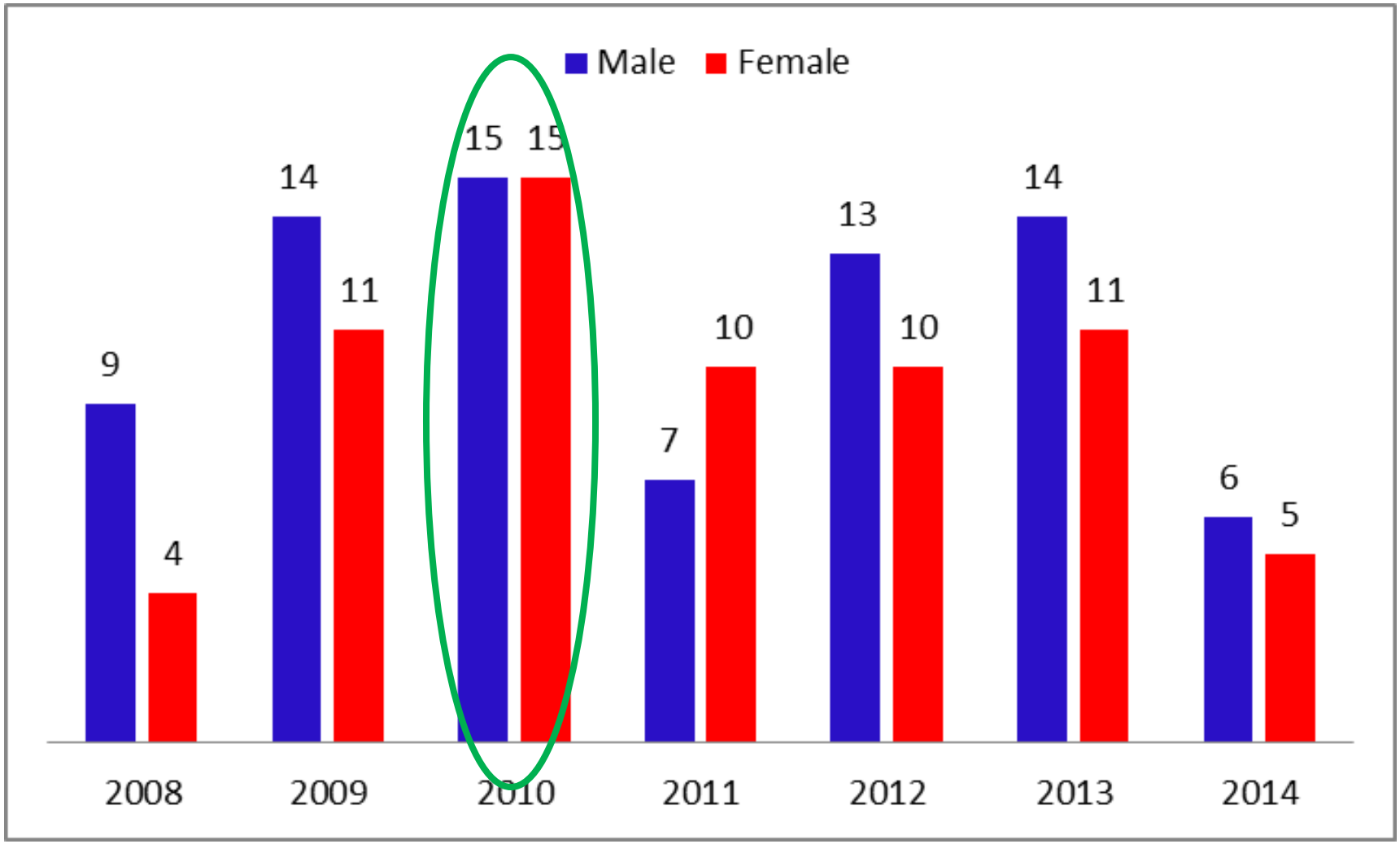
Children exposed to HIV

Year of birth new born

		Frequency	Percent	Valid Percent	Cumulative Percent	Bootstrap for Percent[a]			
						Bias	Std. Error	95% Confidence Interval	
								Lower	Upper
Valid	2008	13	9.0	9.0	9.0	.0	2.4	4.9	14.6
	2009	25	17.4	17.4	26.4	.1	3.2	11.8	23.6
	2010	30	20.8	20.8	47.2	.0	3.5	13.9	27.8
	2011	17	11.8	11.8	59.0	-.1	2.5	6.9	16.7
	2012	23	16.0	16.0	75.0	-.1	3.2	9.7	22.9
	2013	25	17.4	17.4	92.4	.1	3.2	11.8	23.6
	2014	11	7.6	7.6	100.0	-.1	2.2	3.5	11.8
	Total	144	100.0	100.0		.0	.0	100.0	100.0

a. Unless otherwise noted, bootstrap results are based on 1000 stratified bootstrap samples

Number of children exposed to HIV in studied period by year



RESULTS - mothers HIV+

- Median age in mothers was 23.15 and mean 23.08 (range: 17 to 39, SD = 3.58);
- At delivery, mothers´:
  - CD4 mean value was 440/mmc (95% CI for the mean 287.1 to 497.0)
  - VL mean was 15710 copies/ml.
- 92.56 % of mothers received cART during pregnancy;
- Mortality rate in mothers was 5.78%.

HIV-AIDS status in mothers

HIV status mothers

		Frequency	Percent	Valid Percent	Cumulative Percent	Bootstrap for Percent[a]			
						Bias	Std. Error	95% Confidence Interval	
								Lower	Upper
Valid	HIV	55	38.2	38.2	38.2	.2	4.0	30.6	46.5
	AIDS	89	61.8	61.8	100.0	-.2	4.0	53.5	69.4
	Total	144	100.0	100.0		.0	.0	100.0	100.0

a. Unless otherwise noted, bootstrap results are based on 1000 stratified bootstrap samples

cART in pregnancy

cART pregnancy

		Frequency	Percent	Valid Percent	Cumulative Percent	Bootstrap for Percent[a]			
						Bias	Std. Error	95% Confidence Interval	
								Lower	Upper
Valid	YES	128	88.9	88.9	88.9	-.1	2.2	84.0	92.4
	N0	16	11.1	11.1	100.0	.1	2.2	7.6	16.0
	Total	144	100.0	100.0		.0	.0	100.0	100.0

a. Unless otherwise noted, bootstrap results are based on 1000 stratified bootstrap samples

Anemia during pregnancy

Hemoglobin level pregnancy (g/dl)

		Frequency	Percent	Valid Percent	Cumulative Percent	Bootstrap for Percent[a]			
						Bias	Std. Error	95% Confidence Interval	
								Lower	Upper
Valid	(12.1....)	12	8.3	8.3	8.3	.0	2.3	4.2	13.2
	8-12g/dl	125	86.8	86.8	95.1	.0	2.7	81.3	91.7
	< 8g/dl	7	4.9	4.9	100.0	.0	1.7	2.1	8.3
	Total	144	100.0	100.0		.0	.0	100.0	100.0

a. Unless otherwise noted, bootstrap results are based on 1000 stratified bootstrap samples

Marital status of HIV+ mothers

Marital status

		Frequency	Percent	Valid Percent	Cumulative Percent	Bootstrap for Percent[a]			
						Bias	Std. Error	95% Confidence Interval	
								Lower	Upper
Valid	Unmarried	14	9.7	9.7	9.7	-.1	2.5	4.9	14.6
	Concubine	49	34.0	34.0	43.8	.0	3.8	27.1	41.7
	Maried	81	56.3	56.3	100.0	.1	4.2	47.9	63.9
	Total	144	100.0	100.0		.0	.0	100.0	100.0

a. Unless otherwise noted, bootstrap results are based on 1000 stratified bootstrap samples

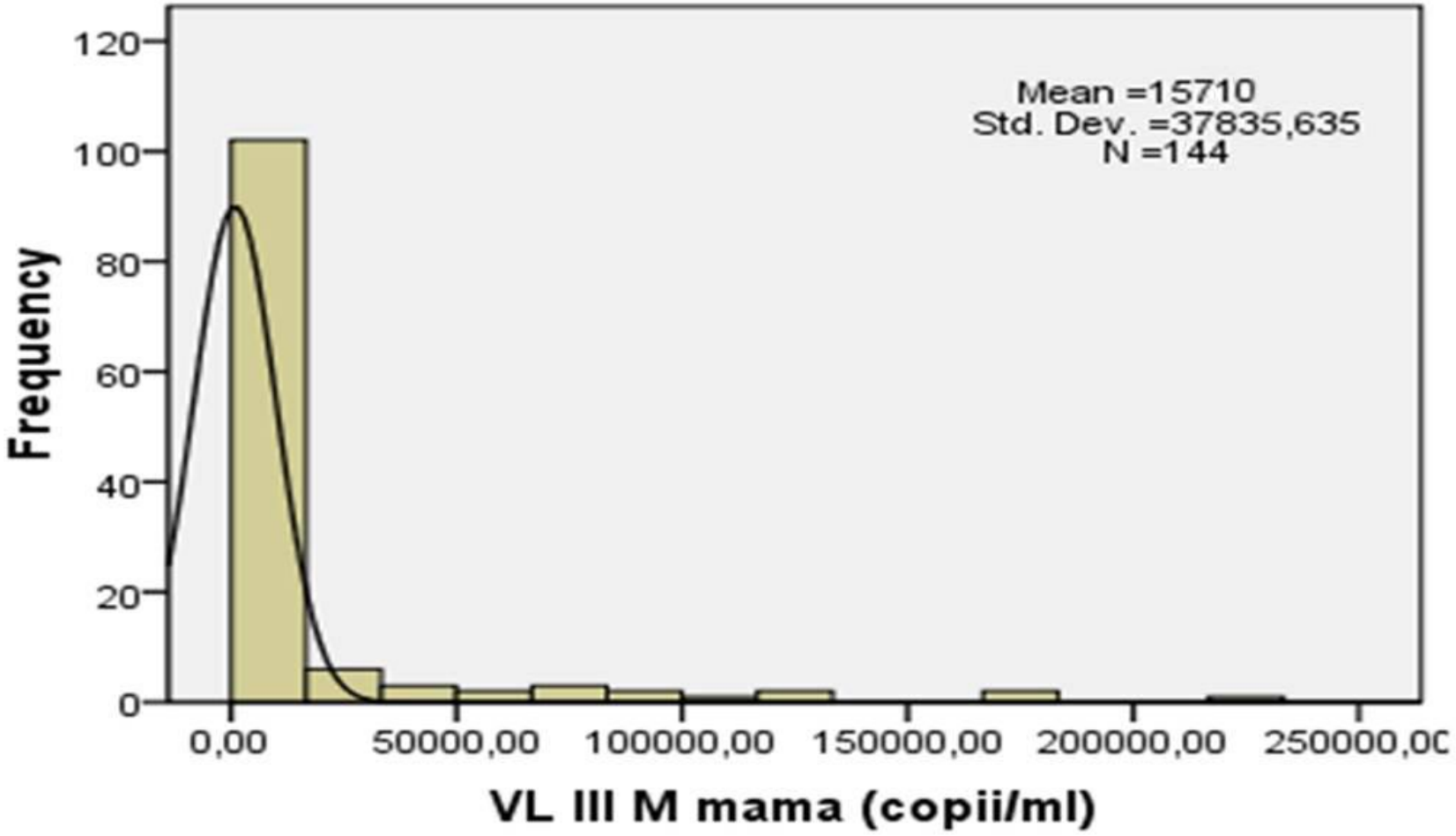
Type of delivery

Tipe of delivery

		Frequency	Percent	Valid Percent	Cumulative Percent	Bootstrap for Percent[a]			
						Bias	Std. Error	95% Confidence Interval	
								Lower	Upper
Valid	C-section	116	80.6	80.6	80.6	.1	3.3	74.3	86.8
	Vaginal	28	19.4	19.4	100.0	-.1	3.3	13.2	25.7
	Total	144	100.0	100.0		.0	.0	100.0	100.0

a. Unless otherwise noted, bootstrap results are based on 1000 stratified bootstrap samples

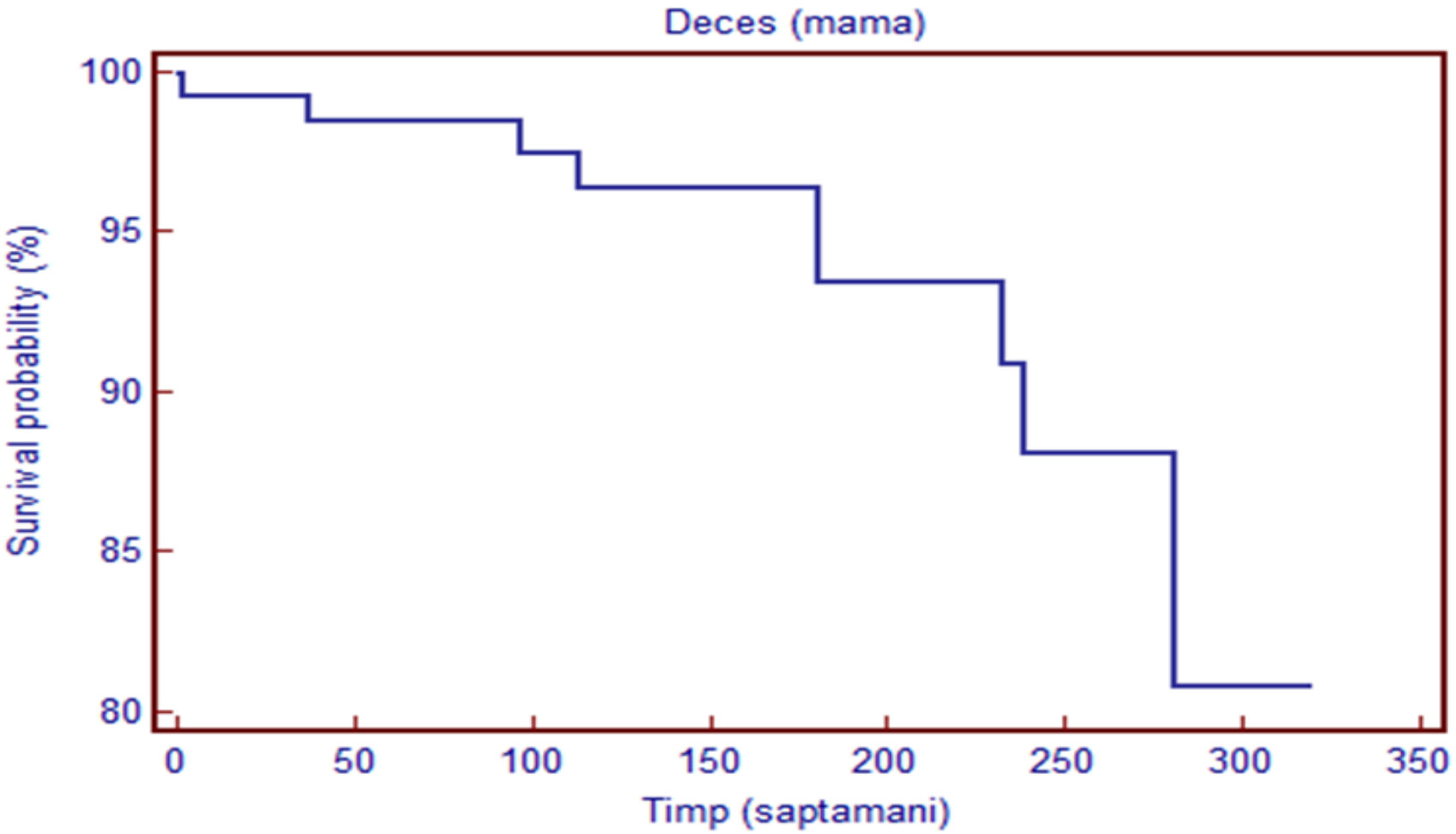
Mother's HIV viral load



General characteristics of HIV+ mothers

Parameter	Median	Min	Max	SD
Age (years)	23.17	17	39	3.58
Hb (g/dl)	10.29	5.8	14.3	1.36
CD4	440	27	1254	265.9
VL (log)	2.79	1.53	5.67	1.25
cART duration (weeks)	27.67	0	40	14.21
Gestational age (weeks)	36.74	24	40	2.06

Kaplan Meyer survival curve in mothers



RESULTS - children exposed to HIV + mothers

- 98.6% children received cART after birth;
- Mortality rate in children was 5.5%;
- 7 children exposed to HIV and HBV; none of them infected;
- HIV transmission in new born is associated with high HIV viral load in mothers ($p<0.0001$).

Repartition by sex

New born sex

		Frequency	Percent	Valid Percent	Cumulative Percent	Bootstrap for Percent[a]			
						Bias	Std. Error	95% Confidence Interval	
								Lower	Upper
Valid	Male	78	54.2	54.2	54.2	.0	4.1	45.8	62.5
	Female	66	45.8	45.8	100.0	.0	4.1	37.5	54.2
	Total	144	100.0	100.0		.0	.0	100.0	100.0

a. Unless otherwise noted, bootstrap results are based on 1000 stratified bootstrap samples

Repartition of children by environmental area

Environmental area

		Frequency	Percent	Valid Percent	Cumulative Percent	Bootstrap for Percent[a]			
						Bias	Std. Error	95% Confidence Interval	
								Lower	Upper
Valid	Urban	61	42.4	42.4	42.4	-.1	4.1	34.0	50.7
	Rural	83	57.6	57.6	100.0	.1	4.1	49.3	66.0
	Total	144	100.0	100.0		.0	.0	100.0	100.0

a. Unless otherwise noted, bootstrap results are based on 1000 stratified bootstrap samples

Children HIV status

Child status

		Frequency	Percent	Valid Percent	Cumulative Percent	Bootstrap for Percent[a]			
						Bias	Std. Error	95% Confidence Interval	
								Lower	Upper
Valid	HIV negative	139	96.5	96.5	96.5	.0	.0	96.5	96.5
	HIV positive	5	3.5	3.5	100.0	.0	.0	3.5	3.5
	Total	144	100.0	100.0		.0	.0	100.0	100.0

a. Unless otherwise noted, bootstrap results are based on 1000 stratified bootstrap samples

New born repartition by Apgar Index

Apgar Index

		Frequency	Percent	Valid Percent	Cumulative Percent	Bootstrap for Percent[a]			
						Bias	Std. Error	95% Confidence Interval	
								Lower	Upper
Valid	2	1	.7	.7	.7	.0	.7	.0	2.1
	3	1	.7	.7	1.4	.0	.7	.0	2.1
	4	1	.7	.7	2.1	.0	.7	.0	2.1
	5	1	.7	.7	2.8	.0	.7	.0	2.1
	6	3	2.1	2.1	4.9	.0	1.2	.0	4.9
	7	8	5.6	5.6	10.4	.0	1.8	2.1	9.0
	8	37	25.7	25.7	36.1	.0	3.6	18.8	33.3
	9	79	54.9	54.9	91.0	-.1	3.9	47.2	62.5
	10	13	9.0	9.0	100.0	.1	2.4	4.9	13.9
	Total	144	100.0	100.0		.0	.0	100.0	100.0

a. Unless otherwise noted, bootstrap results are based on 1000 stratified bootstrap samples

cART in children

cART in new born

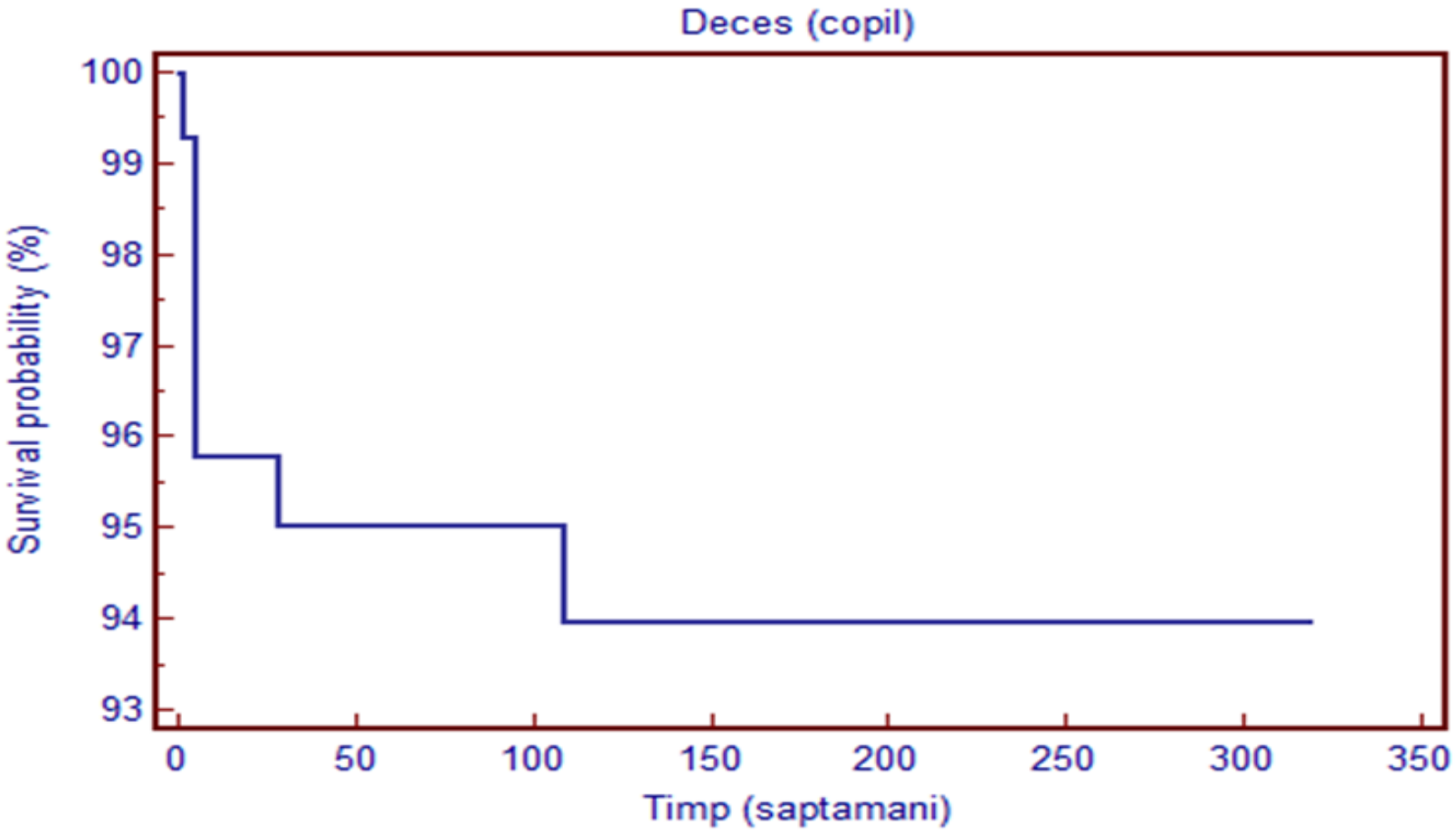
		Frequency	Percent	Valid Percent	Cumulative Percent	Bootstrap for Percent[a]			
						Bias	Std. Error	95% Confidence Interval	
								Lower	Upper
Valid	AZT+3TC+NVP	117	81.3	81.3	81.3	.0	3.2	75.0	86.8
	AZT+3TC	17	11.8	11.8	93.1	.0	2.6	6.9	17.4
	AZT	5	3.5	3.5	96.5	.0	1.5	.7	6.9
	Without	5	3.5	3.5	100.0	.0	1.5	.7	6.3
	Total	144	100.0	100.0		.0	.0	100.0	100.0

a. Unless otherwise noted, bootstrap results are based on 1000 stratified bootstrap samples

General characteristics of newborns

	Median	Mean	Min	Max	SD
Height (cm)	47.52	48	40	57	0.24
Weight (g)	2670.56	2700	1000	3900	512.16
Head circumference (cm)	32.52	33	27	38	2,14
Apgar score	8.54	9	4	10	0.94

Kaplan Meyer survival curve in children



Conclusions

- Our model of care decreased the HIV MTCT rate over the years: 8% in 2009 → 4% in 2013.

- In studied period MTCT rate in Constanta was:
  - 3.4% for HIV,
  - 0 % for HIV and HBV coinfection.

Romanian targets for PMTCT

- Our goal is to have MTCT of HIV and coinfections = **ZERO**

- This means a sustained activity to detect infections in mothers and to assure the prophylaxis against children transmission:
  - diagnosis in first semester of pregnancy
  - cART, during pregnancy for the mother and immediately after birth for the newborn
  - delivery by C-section
  - no breastfeeding.

Constanta PMTCT

- Majority of the children borne in Constanta, Romania from HIV-infected mothers are not infected and they are healthy.

- We are calling them "***Precious Children***" and together with NGO we are operating special programs for them.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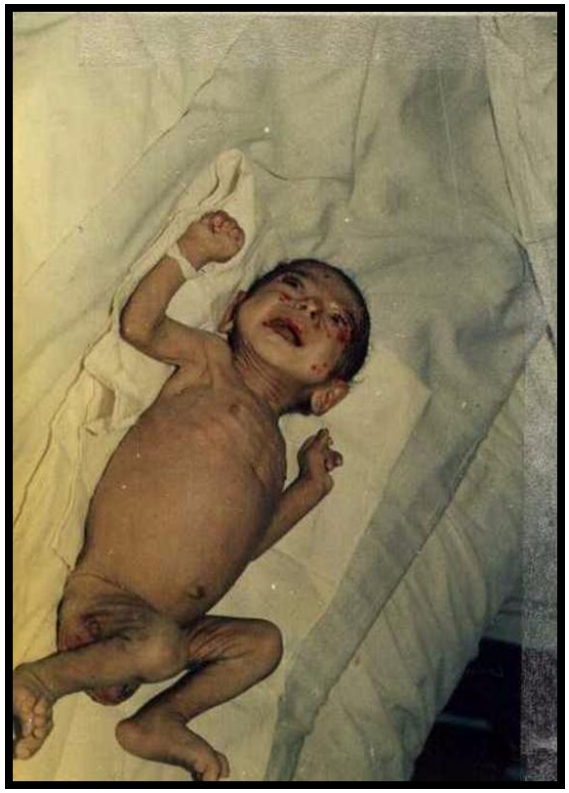
HIV in Constanta……over the years

At the beginning ……..1990



Now….2014


Thank you!