Background - PrEP and STIs

- Pre-exposure prophylaxis (**PrEP**) is highly effective in preventing HIV, **but no protection against other sexually transmitted infections** (STIs)

- **Rates of STIs are rising** worldwide, with notably high incidences among MSM PrEP-user in high-income countries

- The potential increase risk of STIs during PrEP is though counterbalanced by the <u>increased STIs screening</u> during a regular PrEP visits schedule

- **Antimicrobial Resistance** (AMR) of ***N. gonorrhoeae*** has increased rapidly

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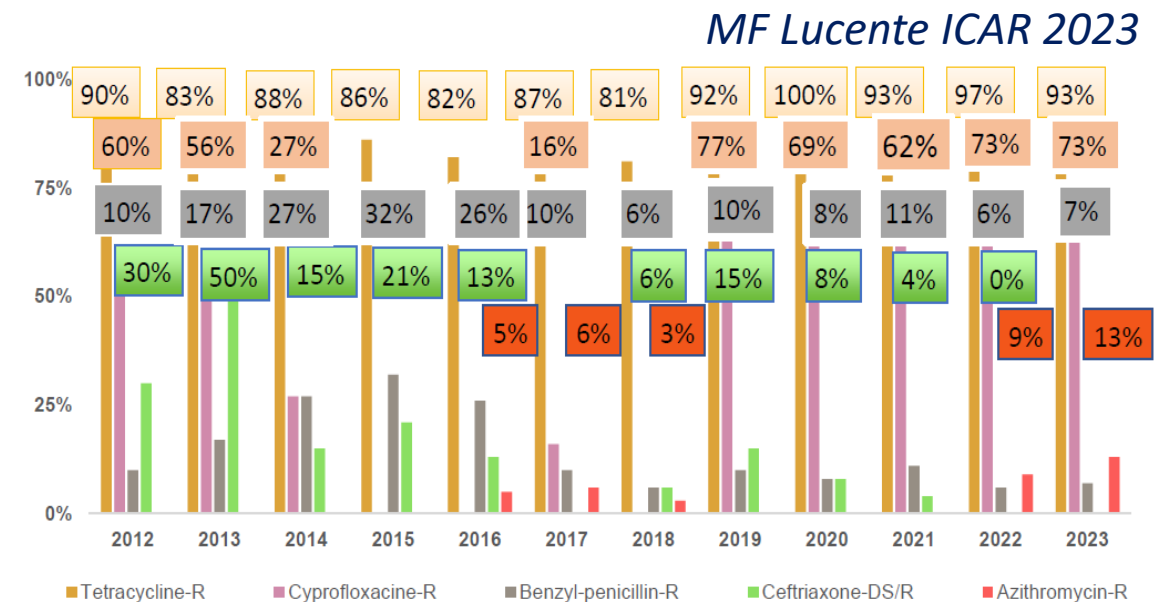
Few data are available on the **temporal trends of diagnosis and incidence of STIs** in recent years following **PrEP** implementation **in Italy specifically in the city of Milan** among this high-risk group

Aims

Describe among PrEP users of Milano Checkpoint (MCP) in the last 4 years (2019-2022):

1. HIV and HCV incidence

2. Trends of bacterial STIs (chlamydia, gonorrhoea, syphilis) prevalence and incidence

3. Identify groups at higher risk of increased STIs incidence

Milano Checkpoint

- Community-based association in Milan
- Founded by 5 association (ANLAIDS, Arcigay, ASA, LILA, NPS) involved in advocacy for PLWH
- Self-funded
- Started in 2019
- Main Activities:
  - Counseling of rapd tests for HIV and syphilis
  - PrEP service
  - Infopoint (*Mi'mportavenezia*) in the LGBTQ district of Milan for promoting health and harm reduction intervention on drugs and alcohol
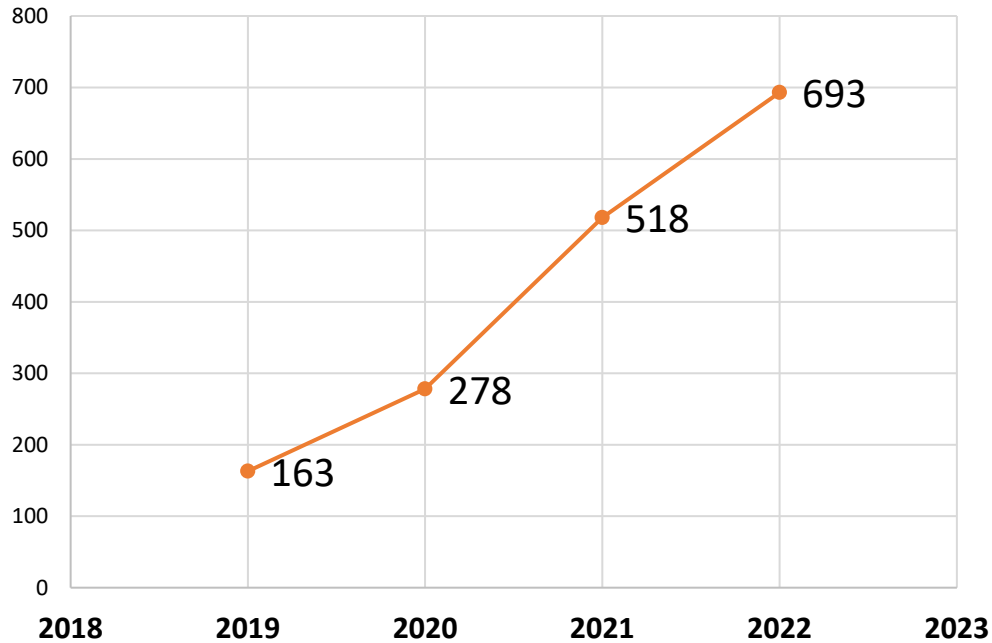
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Methods

- Retrospective analysis of prospectively collected data of **PrEP users** attending the community-based service of **Milano Check Point from 2019 to 2022**

- Demographic and clinical information together with sexual and behavioural features were collected though an **online self-administered questionnaire before every PrEP visit**

- Follow-up visits every **4 months**

- During each visit PrEP users undergo screening for **HIV**, **HCV** and **syphilis** (Lue) with **Point-of-Care Test** (POCT) and screening for *Chlamydia trachomatis* (Ct), *Neisseria gonorrhoea* (Ng), using the rapid GeneXpert platform with Xpert CT/NG **NAAT assays** (Cepheid) on pooled samples from urine, anal and pharyngeal sites.

Statistical analysis

- PrEP users were **included** if they **had least one STI test**

- Prevalence and incidence rates (IR) of **HCV and HIV seroconversions** has been calculated

- **Repeated tests** after 1st visit were counted to calculate chlamydia, gonorrhoea and syphilis **IR over years.**

- Each user can participate to IR calculation of different calendar year according to individual's FU

- **Incidence rate ratios** (IRRs) used to estimate changes in **STIs incidence per calendar year** were calculated using **Poisson regression model**, crude and adjusted for age and nation of birth (Italian born vs non-native).

- **Differences** in IR and IRR over calendar years have been further calculated **according to nation of birth and age strata**

Study Population
PrEP users of MCP (N=878)

MCP PrEP users in FU/year

PrEP users MCP (N=878)		
Age, median (IQR)	36	31-44
<25	50	5.7%
25-39	499	56.8% ←
>39	329	37.5%
Gender		
M	858	97.7% ←
F	12	1.4%
TGW	8	0.9%
Sexual Orientation		
Hetero	29	3.3%
MSM	846	96.6% ←
Bisex	*94*	*10.7%*
Nation of Birth, ITA	696	79.3%
Relationship Status		
Partner	229	26.1%
Single	645	73.5%
Unknown	4	0.4%
Education, University	602	68.6% ←
Job, Employed	753	86.1% ←
Sex workers	30	3.4% ←
Previous STIs (1st visit)	252	29.1%
Chemsex use (1st visit)	139	16.0% ←
Slam (1st visit)	8	0.9% ←
5PDi use (1st visit)	147	17.0%
Sex under alcohol (1st visit)	441	51.2%
Fisting/Sex Toys sharing/ Group sex (1st visit)	324	37.4% ←

HIV seroconversions

HCV seroconversions

1 HIV seroconversion (0.11%)

4 HCV seroconversions (0.45%)

0.99 x 1000 PYFU (95CI% 0.02-5.56)

4.00 x 1000 PYFU (95%CI 1.09-10.24)

- *User on 'On demand' PrEP schedule for 1.3 years*
- *PrEP not interrupted but not taken it correctly*
- *Last negative HIV test 2.9 months*
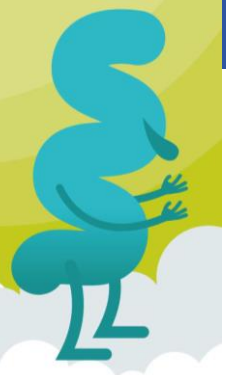- *CD4 count 929 cells/mmc*
- *HIV-RNA 841 copis/ml*
- *M184V*

No HCV-reinfections (till Dec2022)

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Syphilis infections – prevalence and incidence /year

83 syphilis positive test in 73 PrEP users:

(9.4%; 95%CI 7.6-11.6)
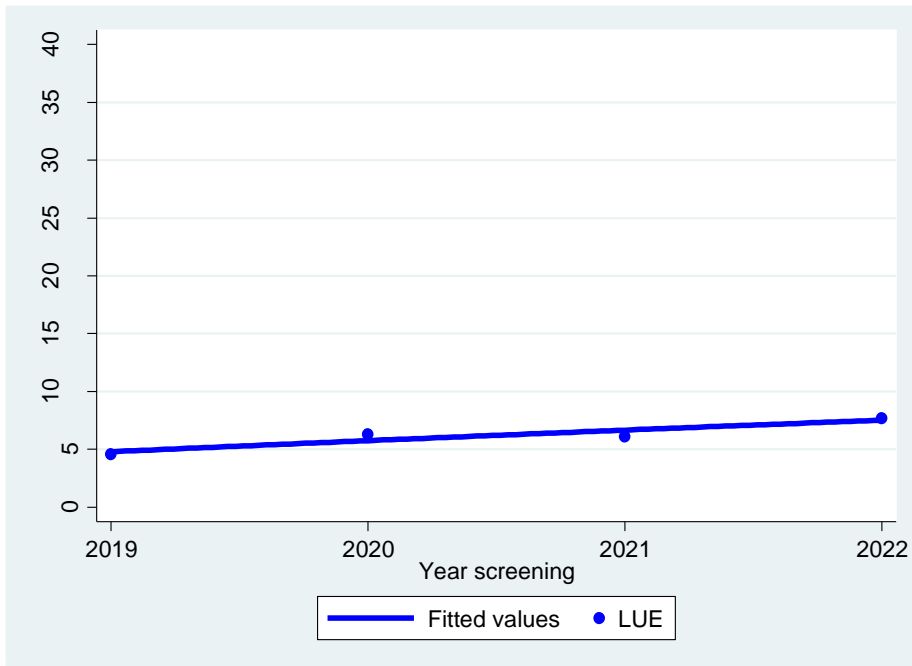
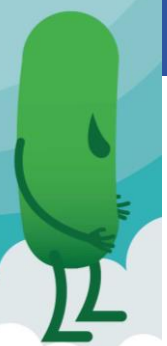| year	Lue pos	PrEP users tested	prevalence Lue (95%CI)	Incident Lue pos test	PYFU	Incidence Rate Lue (x100 PYFU)
2019	7	133	5.3% (2.1-10.5)	3	65.6	4.6 (0.9-13.4)
2020	10	265	3.8% (1.8-6.8)	9	143.8	6.3 (2.9-11.9)
2021	33	518	6.4% (4.4-8.8)	20	330.0	6.1 (3.7-9.4)
2022	33	683	4.8% (3.3-6.7)	29	377.6	7.7 (5.1-11)
Total	83			61	917.0	6.7 (5.1-8.5)

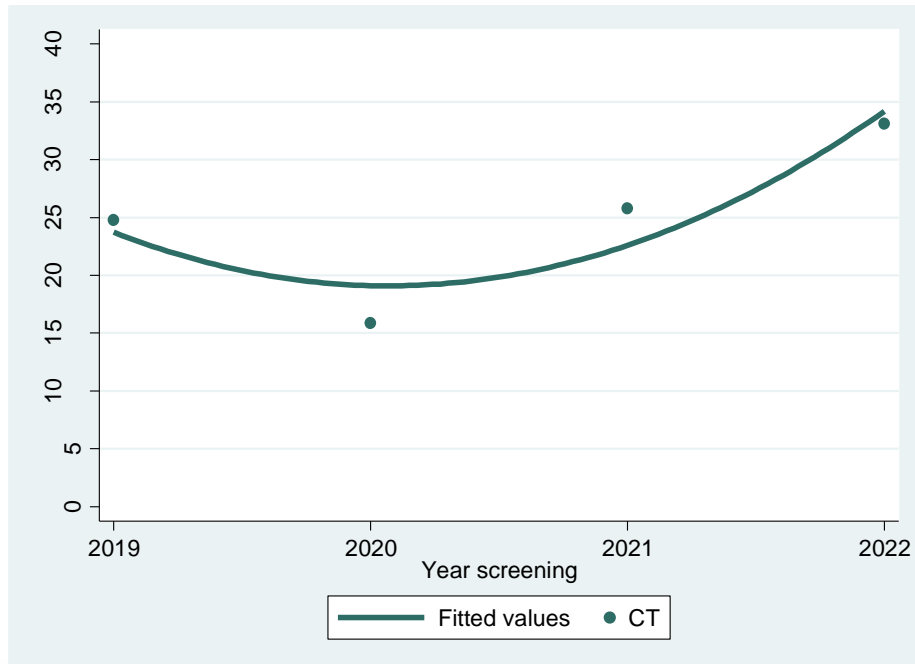| Lue	IRR	95%CI		p	aIRR*	95%CI		p
2019	1.00				1.00			
2020	1.37	0.37	5.05	0.638	1.39	0.38	5.14	0.620
2021	1.32	0.39	4.46	0.65	1.36	0.40	4.58	0.620
2022	1.68	0.51	5.51	0.393	1.72	0.52	5.64	0.374

*IRR and aIRR of Syphils infection, by fitting Poisson regression model (*Adjusted for age and nation of birth)*

Chlamydia infections – prevalence and incidence / year

329 Ct positive test in 234 PrEP users:

(26.6%; 95%CI 23.7-29.7)

year	Ct pos	users tested	prevalence Ct (95%CI)	Incident Ct pos test	PYFU	Incidence Rate Ct x100 PYFU (95%CI)
2019	30	158	19.0% (13.2-26)	20	80.5	24.8 (15.2-38.4)
2020	31	276	11.2% (7.8-15.6)	24	151.0	15.9 (10.2-23.6)
2021	117	515	22.7% (19.2-26.6)	84	325.1	25.8 (20.6-32)
2022	151	685	22.0% (19-25.3)	125	377.8	33.1 (27.5-39.4)
Total	329			253	934.3	27.0 (23.8-30.6)

| Ct	IRR	95%CI		p	aIRR*	95%CI		p
2019	1.00				1.00			
2020	0.64	0.35	1.16	0.141	0.64	0.35	1.16	0.139
2021	1.04	0.64	1.69	0.873	1.04	0.64	1.69	0.883
2022	1.33	0.83	2.14	0.233	1.32	0.82	2.11	0.254

*IRR and aIRR of Ct infection, by fitting a Poisson regression model (*Adjusted for age and nation of birth)*

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Gonorrhea infections – prevalence and incidence/year

318 Ng positive test in 227 PrEP users:

(25.8%; 95%CI 23.0-28.9)
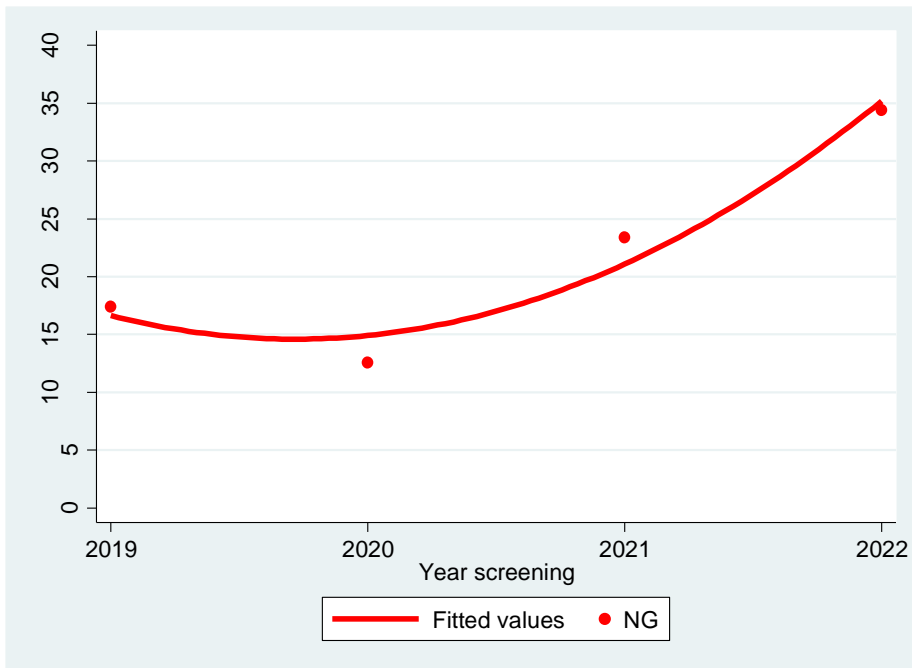
| year	Ng pos	users tested	prevalence Ng (95%)	Incident Ng pos test	PYFU	Incidence Rate Ng x100 PYFU (95%CI)
2019	22	158	13.9% (9-17.2)	14	80.5	17.4 (9.5-29.2)
2020	35	278	12.7% (17.7-25)	19	151.0	12.6 (7.6-19.6)
2021	109	515	21.2% (19.1-25.5)	76	325.1	23.4 (18.4-29.3)
2022	152	685	22.2% (17.5-21.4)	130	377.6	34.4 (28.8-40.9)
Total	318			239	934.3	25.5 (22.4-29)

Ng	IRR	95%CI		p	aIRR*	95%CI		p
2019	1.00				1.00			
2020	0.72	0.36	1.44	0.36	0.72	0.36	1.44	0.354
2021	1.34	0.76	2.38	0.308	1.34	0.76	2.36	0.32
2022	1.98	1.14	3.44	**0.015**	1.95	1.12	3.39	**0.018**

IRR and aIRR of Ng infection, by fitting Poisson regression model
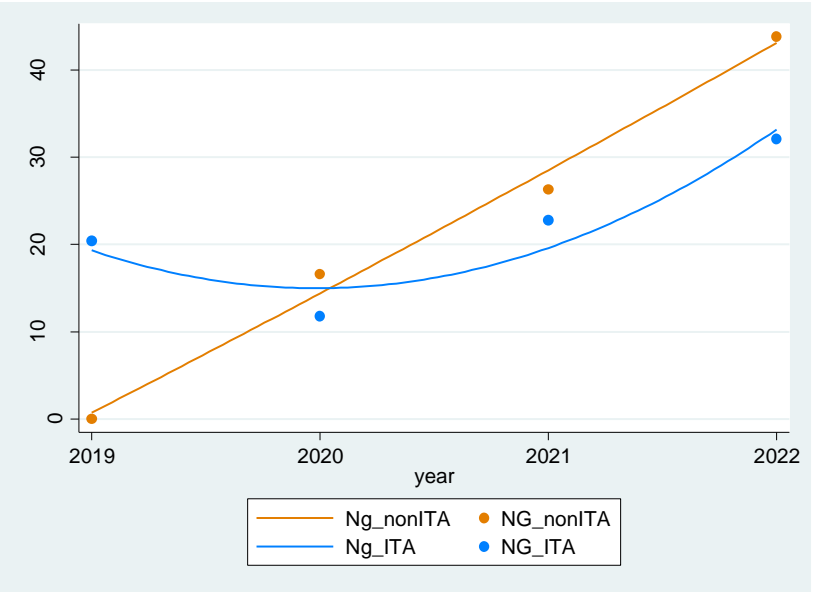*Adjusted for age and nation of birth*

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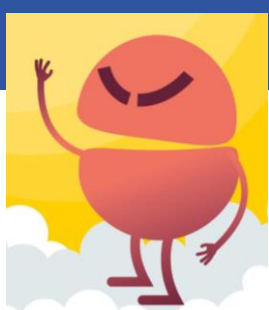
Gonorrhea IR by age and nation of birth

by nation of birth

*p-value for interaction year*ita < 0.001*

	Italian native			non-italian native		
	aIRR	95CI%	p	aIRR	95CI%	p
2019-2020	1			1		
2021	1.56	1.00-2.43	0.047	2.50	0.83-7.52	0.104
2022	**2.20**	1.45-3.33	<.001	**4.16**	1.47-11.74	0.007

by age strata

*p-value for interaction year*age_strata < 0.001*

	<30 yrs			>=30 yrs		
	aIRR	95CI%	p	aIRR	95CI%	p
2019-2020	1			1		
2021	2.00	0.76-5.26	0.162	1.58	1.00-2.48	0.046
2022	**4.04**	1.68-9.74	0.002	**2.16**	1.41-3.31	<.001
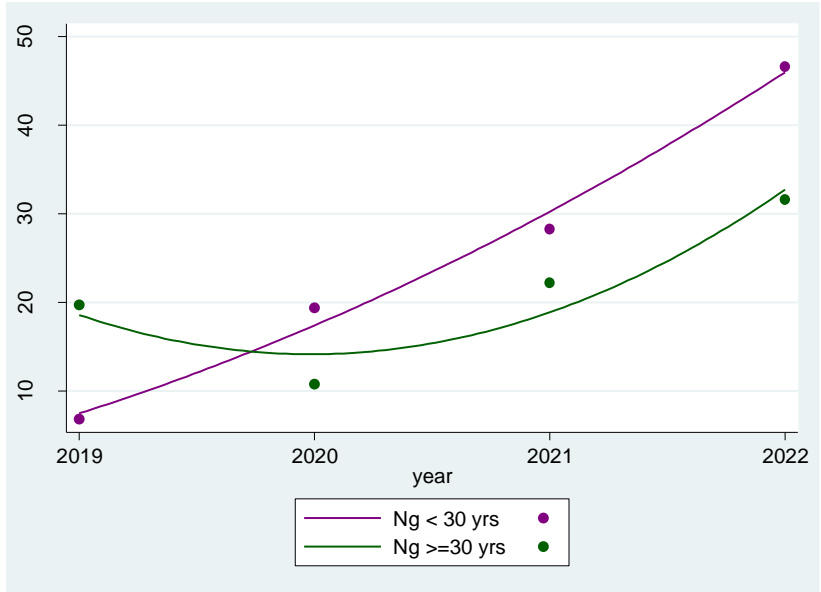
Limitations

- MCP is a self-funded institution → no other STIs tested

- No info on **antibiotic resistance** of positive samples

- Effect of **MenB** vaccine still under investigation

- No info on **Doxy-PEP** use for MCP users

- Analysis don't include **STIs – between visits** -outside MCP

- **Pooling** of anal, pharyngeal and urine samples **could reduce sensitivities** for low Ng/Ct bacterial loads

Underestimation STIs incidence

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Conclusions

- PrEP is **effective as prevention** strategy with only 1 serconversions in 4 years in this high risk group

- **Low** circulation of **HCV in Italy** among MSM → 'slam' practicing not widespread in Italy

- **Chlamydia and Gonorrhea incidences** among PrEP users were **high** (>25 x 100PYFU) but comparable with literature data on PrEP users from HIC

- **Syphilis** incidence remains **low** throughout the follow-up period

- In **2022 a significant increase in Ng** has been identified with an incidence **2-times** higher compared to 2019, more relevant among **non-Italians** and **younger** PrEP users (4-times higher)

- Monitoring both the sexual behaviours/compensation and the actual diagnosis of STIs for PrEP users is an essential role PrEP services for controlling the burden of STIs

- Particularly important during the Ng "outbreak", given the high contagiousness and the reports of resistance

Acknowledgments

<u>Milano Checkpoint Team</u>

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