Active case finding for communicable diseases in prison settings: increasing testing coverage and uptake among the prison population in the EU/EEA

Web Appendix

Web Appendix 1. Review objectives and questions

Web Table 1: PICO table

	Active case finding for selected communicable diseases at entrance and during prison stay
P	Adult individuals (≥18 years) in prison settings (i.e. those detained and those who work in prison settings ("going through the gate"))
I	Active case finding for communicable diseases at entrance and during prison stay (including at release)
C	- Comparison with no intervention; - Comparison with alternative intervention; - No comparison; - Comparison between populations in prison settings (e.g. between different prison types, risk groups, etc.) - Comparison with community setting
O	*Qualitative outcomes:* Accessibility Feasibility and acceptability of active case finding at entrance and during prison stay Qualitative description of interventions/modes of service delivery *Quantitative outcomes:* Uptake (number of persons screened) Positivity rate Measures of effectiveness (e.g. change in communicable disease incidence or prevalence) Cost-effectiveness
S	Prisons, jails and other custodial settings with a function as prison (excluding migrant centres and police detention rooms)

Review questions:

- What are the communicable diseases that are covered by active case finding?
- Which types of active case finding modalities are effective?
- Which service models for active case finding interventions are effective?
- Which types of active case finding modalities are cost-effective?
- Which service models for active case finding interventions are cost-effective?
- What is the acceptance of active case finding?
- How to improve the acceptance of active case finding testing?
- Who should be targeted for active case finding, when and how often?

Web Appendix 2. Peer reviewed literature search

The search strategy was developed building on the scoping phase by ECDC with respect to using PubMed and Embase (Embase.com) as peer-reviewed data sources. Additionally, the Cochrane Library database was searched for systematic reviews and economic evaluations.

Search strings

In order to find relevant articles for the macro areas in PubMed and Embase.com, search strings were developed for each of the following concepts:

1. Prisons, jails and other custodial settings
2. Active case finding

In PubMed and Embase.com search string #1 was combined using "AND" with string #2 (i.e. #1 AND #2).

For Cochrane Library one generic search using the terms for prisons was used to search for all relevant systematic reviews and economic evaluations.

PUBMED

#1 Prisons and other custodial settings:"Prisons"[Mesh] OR "Prisoners"[Mesh] OR prison*[tw] OR penal[tw] OR jail*[tw] OR reformator*[tw] OR custodial[tw] OR custody[tw] OR gaol*[tw] OR remand*[tw] OR penitentiar*[tw] OR detention*[tw] OR correctional[tw] OR detainee*[tw] OR inmate*[tw] OR imprison*[tw] OR confinement[tw] OR incarcerat*[tw] OR cellmate*[tw]

#2 Active case finding:"Mass Screening"[Mesh] OR "Mandatory Testing"[Mesh] OR screen*[tw] OR "case finding"[tw] OR "case-finding"[tw] OR casefinding[tw] OR "cases finding"[tw] OR "case identification"[tw] OR "cases identification"[tw] OR testing[tw] OR "rapid test"[tw] OR "rapid tests"[tw] OR "Early diagnosis"[Mesh] OR early diagnos*[tw] OR early detect*[tw] OR early test*[tw] OR "clinical evaluation"[tw] OR "clinical evaluations"[tw]

EMBASE.COM

#1 Prisons and other custodial settings: 'prison'/exp OR 'prisoner'/exp OR prison*:ti,ab OR penal:ti,ab OR jail*:ti,ab OR reformator*:ti,ab OR custodial:ti,ab OR custody:ti,ab OR gaol*:ti,ab OR remand*:ti,ab OR penitentiar*:ti,ab OR detention*:ti,ab OR correctional:ti,ab OR detainee*:ti,ab OR inmate*:ti,ab OR imprison*:ti,ab OR confinement:ti,ab OR incarcerat*:ti,ab OR cellmate*:ti,ab

#2 Active case finding: 'mass screening'/exp OR 'screening test'/exp OR 'screening'/de OR 'mandatory testing'/exp OR screen*:ti,ab OR 'case finding'/exp OR "case finding":ti,ab OR "case-finding":ti,ab OR casefinding:ti,ab OR "cases finding":ti,ab OR "case identification":ti,ab OR "cases identification":ti,ab OR testing:ti,ab OR "rapid test":ti,ab OR "rapid tests":ti,ab OR 'early diagnosis'/exp OR early diagnos*:ti,ab OR early detect*:ti,ab OR early test*:ti,ab OR 'clinical evaluation'/exp OR "clinical evaluation":ti,ab OR "clinical evaluations":ti,ab

COCHRANE LIBRARY

#1 Prisons and other custodial settings: MeSH descriptor: [prisons] explode all trees OR MeSH descriptor: [prisoners] explode all trees OR prison*:ti,ab,kw OR penal:ti,ab,kw OR jail*:ti,ab,kw OR reformator*:ti,ab,kw OR custodial:ti,ab,kw OR custody:ti,ab,kw OR gaol*:ti,ab,kw OR remand*:ti,ab,kw OR penitentiar*:ti,ab,kw OR detention*:ti,ab,kw OR correctional:ti,ab,kw OR detainee*:ti,ab,kw OR inmate*:ti,ab,kw OR imprison*:ti,ab,kw OR confinement:ti,ab,kw OR incarcerat*:ti,ab,kw OR cellmate*:ti,ab,kw

Inclusion and exclusion criteria

Web Table 2. Inclusion and exclusion criteria peer-reviewed literature

	Inclusion	**Exclusion**
Study design/ type	• Meta-analysis or systematic review[1] • Randomised controlled trials (RCTs) • Non-randomised, prospective comparative studies • Prospective observational studies (e.g. cohort studies) • Retrospective observational studies (e.g. case-control studies) • Cross-sectional studies	• Narrative review • Case reports • Non-pertinent publication types (e.g. expert opinions, letters to the editor, editorials, comments, conference abstract/poster, news, consensus document, chapter) • Animal studies • Genetic studies, biochemistry or molecular studies • Modelling studies (i.e. this did not apply to economic evaluation studies) • Outbreak studies
Study quality	• Study duration (no minimum) • Number of subjects (no minimum)	• Insufficient methodological quality (both inherent methodology as well as insufficient description of inherent methodology provided; based on quality checklists)
Study population	Adults in prisons, jails and other custodial settings that function as a prison • Detained persons, including persons in remand • Persons "going through the gate" (e.g. prison guards, healthcare workers, etc.)	• Children (<18 years) • Persons in police custody • Persons in migrant detention centres
Geographical area	• EU/EEA + candidate countries, EFTA and other high-income countries (i.e. USA, Canada, Australia, New Zealand)	
Study comparison	• Comparison appropriate for a specific outcome	
Specific outcomes of interest	• Quantitative outcomes • Qualitative outcomes	• No exclusion based on outcomes

[1]High-quality meta-analyses or systematic reviews were included in case they matched the review objectives. If not, the relevant individual articles from these meta-analyses/systematic reviews were checked. If an individual article reported new and relevant data and the study was of sufficient quality, it was included.

Web Appendix 3. Quality appraisal checklists other than NICE

Cross-sectional study	Code as - - / - / + - / + / ++ or NA if not applicable
Author	
Countries	
Internal validity	
The study addresses an appropriate and clearly focused question	
The study population is clearly described	
The population is a representative sample of the source population	
The outcome measures are described	
The assessment of outcome is made blind to exposure status	
Where blinding was not possible, there is some recognition that knowledge of exposure status could have influenced the outcome assessment	
Exposure status is measured in a standard, valid and reliable way	
The measurement of outcome is clearly described (e.g., written questionnaire, face-to-face interview, internet survey)	
The main potential confounders are identified and taken into account in the design and analysis	
Comparison is made between participants and non-participants to establish their similarities/ differences	
Confidence intervals are provided	
If study is carried out at more than one site, results are comparable for all site	
Overall assessment of the study	
How well was study done to minimize confounding/ bias, and to establish a causal relationship?	
If coded + or -, what is the likely direction in which bias might affect the study results?	
Was the likelihood of bias due to measuring exposure and outcome at the same moment, taken into account by the authors?	
Are you certain that the overall effect is due to the exposure being investigated?	
Are the results of the study applicable to the patient group targeted in the search question?	
Comments	
Include or exclude	
If exclusion, give reason	

Surveillance study	Code as - - / - / + - / + / ++ or NA if not applicable

Author	
Countries	
Internal validity	
The study addresses an appropriate and clearly focused question	
The population being studied is selected from a data source that is representative for the overall population of interest	
The outcomes are clearly defined	
The main potential confounders are identified and taken into account in the design and analysis	
Additional questions	
Are epidemiological outcomes described that can be used in this review, e.g. incidences or rates per 100,000 or proportion of cases?	
Is the study population large enough to be a representative sample of the source population?	
Is the disease of interest the main subject of the paper?	
Are the outcomes of the study based on observed cases (and not on assumptions or models?)	
The surveillance period is long enough to detect new cases and to accurately calculate prevalence/ incidence rates	
Overall assessment of the study	
Are the results valid?	
Are the results applicable to the population targeted in the search question?	
Comments	
Include or exclude	
If exclusion, give reason	

Other research (applied to outbreak studies)

Code as - - / - / + - / + / ++ or NA if not applicable

Author	
Countries	
Internal validity	
The study addresses an appropriate and clearly focused question	
The study population is clearly described	
The population is representative of the source population	
Exposure status is measured in a standard, valid and reliable way	

The outcomes are clearly defined	
Variation (e.g. range, SD) in outcome of interest is provided	
The diagnosis of interest the main subject of the paper	
Overall assessment of the study	
Are the results valid?	
Are the results applicable to the population targeted in the search question?	
Comments	
Include or exclude	
If exclusion, give reason	

Web Appendix 4. Grey literature search

Search on pre-defined websites

Websites of conference abstracts

In order to capture studies not published yet in peer-reviewed literature, conference abstracts published in the last five years (i.e. from 2010 onwards) were searched for on all the following websites of relevant congresses:

- International Union for Tuberculosis and Lung Disease (http://www.theunion.org/)
- European Respiratory Society (http://www.ersnet.org/)
- American Respiratory Society (https://www.thoracic.org/)
- International Corrections and Prisons Association (ICPA, http://icpa.ca/)
- American Correctional Association (http://www.aca.org/aca_prod_imis/aca_member)
- Experiencing Prison 7th Global Conference (http://www.inter-disciplinary.net/probing-the-boundaries/persons/experiencing-prison/)
- National Conference on Correctional Health Care (http://www.ncchc.org/national-conference)

Other websites

The following sources were searched for other grey literature documents published in the last ten years (i.e. from 2005 onwards):

- Organisations and institutes:
    - WHO – Health in prisons programme (HIPP) (http://www.euro.who.int/prisons)
    - WHO – EU (http://www.euro.who.int/en/home)
    - WHO – IRIS (http://apps.who.int/iris/)
    - Council of Europe/POMPIDOU Group (http://www.coe.int/T/DG3/Pompidou/AboutUs/default_en.asp), and other Council of Europe documents
    - UNODC (http://www.unodc.org/)

- ECDC (http://ecdc.europa.eu/en/Pages/home.aspx)
- Public Health England (PHE) – (http://www.gov.uk)
- European Monitoring Centre for Drugs and Drug Addition (EMCDDA) (http://www.emcdda.europa.eu/)
- International Corrections and Prisons Association (ICPA, http://icpa.ca/)

- Bibliographies
  - Campbell Collaboration (http://www.campbellcollaboration.org/)
  - Bibliography on HIV/AIDS and Hepatitis C in prisons (http://www.aidslaw.ca/)
  - IDEAS (https://ideas.repec.org/)
  - Evidence in Health and Social Care (NHS Evidence, https://www.evidence.nhs.uk/)
  - Open grey (http://www.opengrey.eu)

Inclusion and exclusion criteria

Web Table 3. Inclusion and exclusion criteria grey literature

	Inclusion	**Exclusion**
Period of publication	Conference abstracts: from 2005 onwards Other documents: from 2010 onwards	
Type of document	• Intervention or clinical protocols • Unpublished research results • Case studies/service models, including measures of effectiveness	• Published article
Document quality	Only grey literature documents with a methods section or an overview of sources.	Document without a clear source/reference for the relevant information
Document population	Adults in prisons, jails and other custodial settings that function as a prison • Detained persons, including persons in remand • Persons "going through the gate" (e.g. prison guards, healthcare workers, etc.)	• Children (<18 years) • Persons in police custody • Persons in migrant centres
Subject of the document	• Active case finding for communicable diseases at entrance and during prison stay •	
Geographical area	• EU/EEA	
Specific outcomes of interest	• Quantitative outcomes • Qualitative outcomes	• No exclusion based on outcomes

Web Appendix 5. Quality control

During the review process, the following quality control measures were put in place for search and selection of peer-reviewed literature:

- Peer-review of the search strings by ECDC librarians and expert panel members.
- Selection based on title and abstract was performed by two independent researchers. All hits that could be excluded for clear reasons (based on the inclusion/exclusion criteria) were excluded. When in doubt, the title and abstract were assessed in duplicate and discussed. All references included by these two researchers (including the remaining doubt articles) were checked by another researcher with expertise in the field of prison health, who took the final decision on the articles in doubt.
- Duplicate screening and critical appraisal of 50% of the full text articles was performed by two independent reviewers to avoid incorrect selection of articles for data extraction. The

results were compared and discussed early in the review process and any disagreements were adjudicated by a third reviewer if necessary. Any doubts arising during the screening of the remainder of the full text articles were discussed in the project team.

- Evidence tables were compiled by two researchers (not in duplicate) and all evidence tables were reviewed by an independent researcher.

The following quality control measures were put in place for search and selection of grey literature:

- Evidence tables were compiled by a researcher and reviewed by a second researcher of the project.
- A senior researcher also checked a sample of 10% of the included articles in the evidence tables early in the process to allow for refinement of data extraction.

Web Appendix 6.

Web Table 4: Included records on active case finding for HAV

Reference, country, study design	Prison setting, sample	Testing method, offer	Who, when, promotion	Uptake	Positivity rate	Change in number or % tested	Change prevalence /incidence	Other	Treatment initiation	Level of evidence
At release										
Sieck, 2011 [1] USA Cross-sectional study	A male prison housing minimum, medium, close, and maximum security inmates n=916	Blood test, not further specified Mandatory	All inmates scheduled for release At release (4-6 weeks before the scheduled release day) Letter describing STD testing process	NA	0.0%	NR	NR	NR	NR	Very low

NA=not applicable, NR=not reported, STD=sexually transmitted disease, USA=United States of America

Web Table 5: Included records on active case finding for HBV

Reference, country, study design	Prison setting, sample	Testing method, offer	Who, when, promotion	Uptake	Positivity rate	Change in number or % tested	Change prevalence /incidence	Other	Treatment initiation	Level of evidence
At entry										
Jacomet, 2016 [2] France Cross-sectional study	Two prisons n=702	ELISA Opt-in	Adult inmates At entry (timing NR) Posters, personalised information letters	91.3%	0.6% 0.3% newly diagnosed	NR	NR	NR	NR	Very low
Watkins, 2009 (included in review Rumble, 2015 [3]) Australia Descriptive study	Western Australian prisons (not further specified) n=946	Standard routine BBV testing with venous blood sampling: HIV, HBV, HCV Opt-in	Male and female inmates At entry (within 28 days) NR	NR	4.5% (95% CI 1.2-2.1%)[1]	NR	NR	NR	NR	Very low[2]

Gabbuti A 2015 [4] Italy Series of cross-sectional studies	Regional prison, Florence (Italy) Prisoners: -2009 N=2,303 -2010 N=2,376 -2011 N=2,198 -2012 N=2,015 -2013 N=1,843 -2014 N=1,408	HBV serology Opt-in	All prisoners At entry NR	>95%	-16.5 % in 2009 -15.7% in 2010 -11.7% in 2011 -8.0% in 2012 -6.9% in 2013 -8.1% in 2014	NR	NR	NR	NR	Unpublished research
Foschi A 2015 [5] Italy Cross-sectional study	Single prison in Italy (Opera prison, Milan) N=711	HBV serology Opt-in	All prisoners At entry NR	91.5%	31/468 (6.6%)	NR	NR	NR	NR	Conference abstract
During imprisonment										
Sagnelli, 2012 [6] Italy Cross-sectional study	Six penitentia-ries n=3,468	Analogous commercial immune enzy-matic assay Opt-in	All inmates During imprisonment Presentation on ad-vantages of scree-ning by peer-educa-tors, pamphlets on importance of screening	65.3%	4.4%	Higher uptake than in the nine correctional facilities evalua-ted in this study before peer-edu-cation (10.0%)	NR	NR	NR	Very low
Bedoya A 2014 [7] Spain Retrospective study	Single prison in Barcelona (Spain) N=7,767	HBV serology Opt-in	All prisoners from 1987 to 2013 During imprisonment NR	NR	13.2%	NR	NR	NR	NR	Conference abstract
Babudieri S 2015 [8]	4 prisons in Italy	HBV serology	All prisoners	83.8%	104/2233 (4.7%)	NR	NR	NR	NR	Conference abstract

Italy Cross-sectional study	N=2,233	Opt-in	During imprisonment NR							
Babudieri S 2012 [9] Italy Series of cross-sectional studies	20 Italian prisons N=4,072	HBV serology Opt-in	All prisoners During imprisonment Peer educators, leaflets, posters and staff training	56.3%	5.3%	From 10.0% to 42.9%	NR	NR	NR	Conference abstract
At release										
Sieck, 2011 [1] USA Cross-sectional study	A male prison housing minimum, medium, close, and maximum security inmates n=916	Blood test, not further specified Mandatory	All inmates scheduled for release At release (4-6 weeks before the scheduled release day) Letter describing STD testing process	NA	0.5%	NR	NR	NR	NR	Very low

BBV=blood-borne virus, CI=confidence interval, ELISA=enzyme-linked immunosorbent assay, HBV=hepatitis B virus, HCV=hepatitis C virus, HIV=human immunodeficiency virus, NA=not applicable, NR=not reported, RR=relative risk, STD=sexually transmitted disease, USA=United States of America

[1] As reported in Rumble et al., 2015 (and in the original article). Positivity rate is not included in the 95% CI

[2] This article was included in the review of Rumble et al., 2015, which has a very low level of evidence

Web Table 6: Included records on active case finding for HCV

Reference, country, study design	Prison setting, sample	Testing method, offer	Who, when, promotion	Uptake	Positivity rate	Change in number or % tested	Change prevalence /incidence	Other	Treatment initiation	Level of evidence
At entry										
Jacomet, 2016 [2] France Cross-sectional study	Two prisons n=702	ELISA Opt-in	Adult inmates At entry (timing NR) Posters, personalised information letters	89.9%	4.7% 2.0% newly diagnosed	NR	NR	NR	NR	Very low

Horne, 2004 (included in review Rumble, 2015 [3]) UK Descriptive study	Dartmoor Prison, UK n=3,034	Standard routine BBV testing with venous blood sampling: HCV (HCV antibody testing and confirmatory PCR) Opt-in	Male inmates At entry (timing NR) NR	12%	12.0%	NR	NR	NR	NR	Very low[1]
Skipper, 2003 (included in review Rumble, 2015 [3]) UK Descriptive study	Isle of Wight (not further specified) n=1,618	Standard routine BBV testing with venous blood sampling: HIV, HBV, HCV (HCV antibody testing and confirmatory PCR) Opt-in	Inmates At entry (timing NR) NR	9%	29.9%	NR	NR	NR	NR	Very low[1]
Kuncio, 2015 [10] USA Cross-sectional study	6 jails and special detention sites (awaiting trial or serving sentences ≤2 years) n=51,562	NR NR	High-risk inmates (HIV-infected or self-reported IDU, identified during medical examination) At entry (timing NR) NR	NR	57% of high-risk inmates** (serosurvey among all entrants during an 8-day period: 11.9%)	NR	NR	Risk-based active case finding failed to capture 4,877, or 76% of the predicted HCV-positive inmates incarcerated in 2011-2012	NR	Very low
Watkins, 2009 (included in review Rumble, 2015 [3]) Australia Descriptive study	Western Australian prisons (not further specified) n=946	Standard routine BBV testing with venous blood sampling: HIV, HBV, HCV Opt-in	Male and female inmates On entry (within 28 days) NR	NR	24.8% (95% CI 20.2-29.5%)	NR	NR	NR	NR	Very low[1]

Gabbuti A 2015 [11] Italy Series of cross-sectional studies	Regional prison, Florence (Italy) -N=2,376 in 2010 -N=2,198 in 2011 -N=2,015 in 2012 -N=1,843 in 2013	HCV serology + HCV-RNA in those HCV ab positive Opt-in	All prisoners At entry NR	-395/1667 (23.7%) in 2010 -419/1617 (25.9%) in 2011 -905/1472 (61.4% in 2012 -960/1166 (82.3%) in 2013	- 281/395 (71.1%) in 2010 with 228 (81.1%) HCV-RNA + - 308/419 (73.5%) in 2011 with 257 (83.4%) HCV-RNA+ - 393/905 (43.4%) in 2012 with 329 (83.7%) HCV-RNA+ - 274/970 (28.2%) in 2013 with 219 (79.9%) HCV-RNA+	NR	NR	NR	NR	Unpublished research
Foschi A 2015 [5] Italy Cross-sectional study	Single prison in Italy (Opera prison, Milan) N=711	HCV serology + HCV-RNA in those HCV ab positive Opt-in	All prisoners At entry NR	91.5%	46/468 (9.8%) HCV RNA positive: 38/46 (83%)	NR	NR	NR	NR	Conference abstract
During imprisonment										
Sagnelli, 2012 [6] Italy Cross-sectional study	Six penitentiaries n=3,468	Analogous commercial immune enzymatic assay Opt-in	All inmates During imprisonment Presentation on advantages of screening by peer-educators, pamphlets on importance of screening	64.6%	22.8%	Higher acceptance than in the nine correctional facilities evaluated in this study before peer-education (20.5%)	NR	NR	NR	Very low
Beckwith, 2015 [12] USA Cross-sectional study	Minimum security facility, women's facility and the intake service centre	OraQuick HCV Rapid Antibody Test (blood specimen); confirmation with HCV RNA	Inmates selected by the research staff During imprisonment	26% reactive rapid HCV test 92% of HCV+ testers underwent	10% reactive HCV test 6% confirmed hepatitis C	NR	NR	NR	26.7% of confirmed HCV inmates were linked to care after release	Very low

	n=957	plasma viral load testing Opt-in	8-minute informational video, post-test counselling appointment reminder card	confirmatory testing						
Babudieri S 2015 [8] Italy Cross-sectional study	4 prisons in Italy N=2,233	HCV serology Opt-in	All prisoners During imprisonment NR	83.8%	17.6%	NR	NR	NR	NR	Conference abstract
Babudieri S 2012 [9] Italy Series of cross-sectional studies	20 Italian prisons N=4,072	HCV serology Opt-in	All prisoners During imprisonment Testing promotion based on peer educators, leaflets, posters and staff training	56.3%	32.8%	From 20.5% to 42.0%	NR	NR	NR	Conference abstract
At entry and during imprisonment										
Cocoros, 2014 [13] USA Cross-sectional study	A county facility, for those awaiting trial and those sentenced <2.5 years n=2,716	Immunoassay testing Opt-in	All inmates At entry (within few days) & during imprisonment when not tested at entry (during regular "sick call") Mandatory education session on hepatitis before choice to be tested, referral upon release if HCV positive	21.9%	20.5%	NR	NR	NR	NR	Very low
At release										
Sieck, 2011 [1] USA Cross-sectional study	A male prison housing minimum, medium, close, and maximum security inmates	Blood test, not further specified Mandatory	All inmates scheduled for release At release (4-6 weeks before the	NA	1.7%	NR	NR	NR	NR	Very low

	n=916		scheduled release day) Letter describing STD testing process							
Opt-in at entry versus client-initiated										
Kim, 2013 [14] USA Before-after study	Two facilities of the correctional institute (one for male and one for female inmates) n=12,297	NR Opt-in	**Risk-based:** High-risk inmates (risk assessment based on dynamic model of virological parameters) At entry (risk assessment within 7 days of admission, timing test NR) Staff educational seminar on benefits identifying acute HCV	80.7% of high risk inmates had laboratory testing*	25.4% of high risk inmates with laboratory testing had positive test result	NR	Historical control period: 0.7 cases/month; risk-based active case finding: 1.94 cases/month	Acute cases identified through active case finding twice as likely to be asymptomatic (48.6%) compared with historical control period (33.3%, RR 2.0; p=0.09)	NR	Very low
		NR Client-initiated	**Historical control:** All inmates When having hepatitis symptoms or significant ALT elevations Staff educational seminars on acute HCV	NR	NR	NR				
At entry versus client-initiated										
Craine, 2015 [15] UK	Five prisons; 1 female closed local prison, 2 male local adult remand	**Intervention:** DBST, detection of HCV antibodies NR	All eligible inmates At entry (timing NR) Pre- and post-test counselling	NR	NR	*At 18 months:* Higher HCV test rates during intervention months (data only	NR	NR	NR	Low

Stepped-wedge cluster-RCT	prisons; 1 male convicted prison (adults & youth); 1 male open prison n=~3,600	**Control:** Venepuncture Only female prison offered routine HCV testing, other prisons NR	All eligible inmates NR NR			stratified presented) Insufficient evidence of effect of the intervention: - ITT: OR=0.84; 95% CI: 0.68-1.03; p=0.088 - Actual intervention time: OR= 0.86; 95% CI: 0.71 - 1.06; p=0.153				
Not specified versus client-initiated										
Hickman, 2008 [16] UK Cluster RCT	6 prisons throughout England and Wales NR	**Intervention:** DBST NR	Inmates, not further specified NR Staff training on counselling, pre- and post-test counselling	NR	NR	*Mean % HCV tested after 6 months follow-up:* 50% increase in one prison pair, 10% increase in other two prison pairs	NR	NR	NR	Moderate
		Control: NR (regular practice) Client-initiated	Inmates, not further specified On request or at selected times each week NR							
Not specified										
Khaw, 2007 [17] UK Cross-sectional and qualitative study	3 prisons in England n=30	NR NR	Inmates, not further specified NR Information sheets about study, no reimbursements/ inducements	63.3%	36.8% HCV+	NR	NR	NR	NR	Very low

ALT=alanine aminotransferase, BBV=blood-borne virus, CI=confidence interval, DBST=dried blood spot testing, *ELISA=enzyme-linked immunosorbent assay, HBV=hepatitis B virus, HCV=hepatitis C virus, HIV=human immunodeficiency virus,* , ITT=intention to treat, NR=not reported, OR=odds ratio, RCT=randomised controlled trial*, RNA=ribonucleic acid, RR=relative risk, USA=United States of America*

[1] This article was included in the review of Rumble et al., 2015, which has a very low level of evidence

**28.2% of admitted inmates were screened for risk factors, 4.9% were high risk inmates*

***5.3% of admitted inmates were high risk inmates*

Web Table 7: Included records on active case finding for HIV

Reference, country, study design	Prison setting, sample	Testing method, offer	Who, when, promotion	Uptake	Positivity rate	Change in number or % tested	Change prevalence /incidence	Other	Treatment initiation	Level of evidence
At entry										
Spaulding, 2015 [18] USA Cross-sectional study	One county jail n=30,799	Rapid HIV test (oral), Western blot confirmatory test (venous blood) Opt-in	Adult newly incarcerated inmates, except HIV positive and mentally incompetent inmates At entry (immediately after booking, timing NR) Pre- and post-test counselling	38.4%	1.1% preliminary positive 0.3% confirmed new HIV cases	NR	NR	NR	NR	Very low
Tartaro, 2013 [19] USA Cross-sectional study	One county jail n=NR (n=689 inmates tested)	Free rapid fingerprick HIV test, confirmatory blood test not specified Opt-in	Newly incarcerated inmates At entry (give consent within 24-72 hours, test mostly 1-3 days after consent) Group-based HIV education while waiting for test results, post-test counselling	*50% consent* *56% tested of those giving consent**	0.3% HIV positive 0.1% newly HIV diagnosed	NR	NR	NR	NR	Very low
Begier, 2010 [20] USA Cross-sectional study	Eleven New York City jails n=9,405 new admissions with available medical intake data	Bio-Rad HIV-1/HIV-2 EIA plus "O", Western Blot confirmatory test Opt-in	Newly incarcerated inmates At entry (timing NR) NR	NR	NR	NR	NR	Based on a blinded serosurvey, n~743 (95% CI 552-934) of the n~ 820 (95% CI 619-1021) annual entrants with	NR	Very low

								undiagnosed HIV remain undiagnosed		
MacGowan, 2009 [21] USA Cross-sectional study	Jails in four states n=550,000	Rapid HIV tests, confirmatory testing using EIA followed by Western blot or immunofluorescent assay (blood/ oral) Opt-in	Newly incarcerated inmates At entry (after 24 hours, in one jail after 72 hours, maximum timing NR) Advertising of rapid HIV tests, pre-test counselling, active follow-up and referral for positive testers	6% rapid test 96% confirmatory test of positive rapid testers	1.3% positive rapid test 1.2% confirmed HIV positive 0.8% new HIV cases	NR	NR	99.9% received test result	NR	Very low
Shrestha, 2009 [22] USA Cross-sectional study	Jail facilities in four USA states n=NR (n=17,433 inmates tested)	OraQuick rapid HIV test Opt-in	Jail inmates At entry (timing NR) Counselling, not further specified, and active referral of positive testers	NR	*Range four jails:* 0.3-2.4% preliminary HIV positive 0.2-1.3% newly confirmed HIV cases	NR	NR	NR	NR	Very low
Strick, 2011 (included in review Rumble, 2015 [3]) USA Descriptive study	Washington State Department of Corrections - Opt-in: n=16,908 - Opt-out: n=5,168	Standard routine BBV testing with venous blood sampling: HIV Period of voluntary[1], opt-in and opt-out	Male inmates At entry (within 14 days) NR	Opt-in: 72%	Opt-in: 0.1% (new)	Increase from 5% (testing on request) to 72% (opt-in) to 90% acceptance (opt-out)	NR	100% of HIV-positive inmates received test result, NR for HIV-negative inmates	NR	Very low[3]
Watkins, 2009 (included in review Rumble, 2015 [3]) Australia Descriptive study	Australian prisons (not further specified) n=946	Standard routine BBV testing with venous blood sampling: HIV, HBV, HCV Opt-in	Male and female inmates At entry (within 28 days) NR	NR	0.6% (95% CI 0.2-1.5%)	NR	NR	NR	NR	Very low[3]

Beckwith, 2007 (included in review Rumble, 2015 [3]) USA Cross-sectional study	Rhode Island Department of Corrections n=100	Rapid routine BBV testing with dried blood spot test: HIV Opt-in	Male inmates At entry (timing NR) NR	95%[2]	0.0%	NR	NR	100% received test result	NR	Very low[3]
Liddicoat, 2006 (included in review Rumble, 2015 [3]) USA Before-after study	County jail Boston, MA n=2,886	Standard routine BBV testing with venous blood sampling: HIV Opt-in	Male and female inmates At entry (timing NR) NR	73%	0.3%	Increase from 18% to 73% compared to historical period when testing was on request	NR	NR	NR	Very low[3]
Cotten-Oldenberg, 1999 (included in review Rumble, 2015 [3]) USA Cross-sectional study	North Carolina Correctional Institution for Women n=680	Standard routine BBV testing with venous blood sampling: HIV Opt-in	Female inmates At entry (timing NR) NR	71%	2.5%	NR	NR	NR	NR	Very low[3]
Behrendt, 1994 (included in review Rumble, 2015 [3]) USA Cross-sectional study	Maryland prison n=2,791 (serosurvey: n=2,842)	Standard routine BBV testing with venous blood sampling: HIV Opt-in	Male and female inmates At entry (timing NR) NR	47%	5.4% (serosurvey: 7.2%)	NR	NR	Compared to the sero-survey, opt-in testing failed to detect 56% of HIV cases	NR	Very low[3]
Hoxie, 1990 (included in review Rumble, 2015 [3]) USA Cross-sectional study	Wisconsin (not further specified) 1987: n=1,783 1988: n=1,675	Standard routine BBV testing with venous blood sampling: HIV Opt-in	Male inmates At entry (timing NR) NR	1987: 40% 1988: 71%	1987: 0.8% (95% CI 0.17-1.53%) 1988: 0.6% (95% CI 0.15-1.03%)	NR	NR	Compared to the sero-survey, opt-in testing failed to detect 28% of HIV cases	NR	Very low[3]

Andrus, 1989 (included in review Rumble, 2015 [3]) USA Cross-sectional study	Oregon corrections system n=977	Standard BBV testing with venous blood sampling: HIV, HBV (HBcAb was used only as surrogate marker for a history of risk behaviour for HIV infection) Opt-in	Male and female inmates At entry (timing NR) NR	65%	0.9%	NR	NR	Compared to the sero-survey, opt-in testing failed to detect 50% of HIV cases	NR	Very low[3]
Spaulding, 2013 (included in review Rumble, 2015 [3]) USA Descriptive study	Fulton County Jail, Georgia n=39,073	Rapid routine BBV testing with oral testing: HIV Opt-out	Male and female inmates At entry (timing NR) NR	64%	0.4% (new)	Increase from 43% acceptance during opt-in testing to 64% under opt-out	NR	NR	NR	Very low[3]
Beckwith, 2012 (included in review Rumble, 2015 [3]) USA Descriptive study	Baltimore (Ba), Philadelphia (Ph), District of Colombia (DC) n=129,084: - Ba: n=72,000 - Ph: n=39,181 - DC: n=17,903	Rapid routine BBV testing with venous blood sampling (Ba) and oral testing (Ph, DC): HIV Opt-out	Inmates At entry (details varied between sites) NR	Ba: 22% Ph: 69% DC: 79%	Ba: 2.0 % Ph: 0.6% DC: 0.8%	NR	NR	NR	NR	Very low[3]
Beckwith, 2011 (included in review Rumble, 2015 [3]) USA Descriptive study	Rhode Island Department of Corrections n=NR (n=1,364 test offers)	Rapid routine BBV testing with oral testing: HIV Opt-out	Male inmates At entry (within 24 hours) NR	*98%*[4]	0.1% (new)	NR	NR	100% of HIV-positive inmates receiv-ed test result, 0% of HIV-negative inmates	NR	Very low[3]

Strick, 2011 (included in review Rumble, 2015 [3]) USA Descriptive study	Washington State Department of Corrections - Opt-in: n=16,908 - Opt-out: n=5,168	Standard routine BBV testing with venous blood sampling: HIV Period of voluntary[1], opt-in and opt-out	Male inmates At entry (within 14 days) NR	Opt-out: 90%	Opt-out: 0.1% (new)	Increase from 5% (testing on request) to 72% (opt-in) to 90% acceptance (opt-out)	NR	100% of HIV-positive inmates received test result, NR for HIV-negative inmates	NR	Very low[3]
Beckwith, 2010 (included in review Rumble, 2015 [3]) USA Descriptive study	Rhode Island Department of Corrections n=140,739	Standard routine BBV testing with venous blood sampling: HIV Opt-out	Male and female inmates At entry (within 24 hours) NR	NR	0.2% (new)	NR	NR	NR	NR	Very low[3]
Kavasery, 2009a (included in review Rumble, 2015 [3]) USA Prospective controlled trial	York Correctional Institution, Connecticut n=323: - Immediate: n=108 - Early: n=108 - Delayed: n=107	Rapid routine BBV testing with oral testing: HIV Opt-out	Female inmates At entry (3 arms: immediate, early, delayed)[2] NR	Immediate: 63% Early: 91% Delayed: 81%	0.0%	NR	NR	100% of HIV-positive inmates received test result, 99% of HIV-negative inmates	NR	Very low[3]
Kavasery, 2009b (included in review Rumble, 2015 [3]) USA Prospective controlled trial	New Haven Correctional Centre, Connecticut n=298: - Immediate: n=103 - Early: n=98 - Delayed: n=97	Rapid routine BBV testing with oral testing: HIV Opt-out	Male inmates At entry (3 arms: immediate, early, delayed)[2] NR	Immediate: 47% Early: 70% Delayed: 65%	0.8% (new)	NR	NR	100% of HIV-positive inmates received test result, NR for HIV-negative inmates	NR	Very low[3]
Foschi A 2015 [5] Italy	Single prison in Italy N=711	Serology Opt-in	All detainees At entry NR	91.5%	15/468 (3.2%)	NR	NR	NR	NR	Conference abstract

Cross-sectional study										
During imprisonment										
Sagnelli, 2012 [6] Italy Cross-sectional study	Six penitentiaries n=3,468	Analogous commercial immune enzymatic assay, Western blot confirmatory test Opt-in	All inmates During imprisonment Presentation on advantages of screening by peer-educators, pamphlets on importance of screening	67.4%	3.8%	Higher acceptance than in the nine correctional facilities evaluated in this study before peer-education (14.1%)	NR	NR	NR	Very low
At entry and during imprisonment										
Kivimets, 2014 [23] Estonia Cross-sectional study	All four prisons in Estonia n=3,289	Fourth generation HIV tests, Western blot confirmatory test Opt-in	All inmates At entry (timing NR) & during imprisonment when negative at entry (once a year or more often when necessary) Counselling, not further specified	At entry: 97.3% During imprisonment: 96% of inmates >1 year in prison during 3-month period	11.8% At entry only: 1.8% new HIV cases Of those >1 year in prison during 3-month period, 12.5% HIV cases identified at entry and 0.06% during imprisonment	NR	NR	NR	NR	Very low
Bauserman, 2001 [24] USA Comparative study	Ten local detention and juvenile justice facilities in one state n=1,314	**Demonstration project:** Blood or oral HIV testing Opt-in **Control:** Blood HIV testing only Opt-in	Inmates in facilities for adults or youths At entry (timing NR) for adults, during imprisonment for youth Pre-test HIV counselling	NR	NR	Demonstration project compared to same time period year earlier: +63%	NR	NR	NR	Very low

Cocoros, 2014 [13] USA Cross-sectional study	A county facility, for those awaiting trial and those sentenced <2.5 years n=2,716	Third-generation assay Opt-in	All inmates At entry (within few days) & during imprisonment when not tested at entry (during regular "sick call") Mandatory HIV education session before choice to test	24.6%	0.8%	NR	NR	NR	NR	Very low
Arriola, 2001 [25] USA Cross-sectional study	Three adult county jails n=NR	Confirmatory testing using a HIV antibody or a CD4 cell count test Opt-in	Inmates In all jails at intake (one jail 3 days after admission, other jails NR), in two jails also during imprisonment Disease education, post-test counselling	NR	17% (7% newly diagnosed)	At all three facilities, the number of inmates HIV tested rose compared to previous testing	NR	NR	49%	Very low
Rosen, 2009 [26] USA Cross-sectional study	Eight intake prisons n=54,664	Conventional ELISA, Western blot confirmatory test Opt-in & client-/clinician-initiated	Newly incarcerated adult inmates At entry (opt-in, within 21 days) and during imprisonment Presentation on BBDs	At entry: 34% During imprisonment: 6% of those not tested at entry	NR	NR	NR	NR	NR	Very low
Kassira, 2001 [27] USA Surveillance study	27 correctional facilities in one state n=22,338	NR Opt-in & client-/clinician-initiated	All inmates At entry (opt-in, timing NR) and when symptoms warrant testing at clinics Counselling, not further specified	At entry: 39%	At entry: 3.3% Client-initiated: 12%	NR	NR	NR	NR	Very low
Prestileo T 2006 [28] Italy	3 western Sicily prisons Sample: 144 IDU inmates	NR Opt-in	IDU inmates At entry and during stay	NR	51/144 (35.4%) -30 (20.8%) HIV infected	NR	NR	NR	18/51 (35.2%)	Conference abstract

Retrospective, longitudinal study	-141 males -3 females		NR		-19 (13.2%) HIV/HCV coinfection -2 (1.4%) HIV/HBV coinfection					
Marco A 2014 [29] Spain Prospective, observational study	2 prisons in Barcelona N=6,691	NR Opt-in	All inmates At entry and during stay NR	NR	68/6.691 (0.97%) -mean age 34 -55.4% foreigners -60% IDU -48.3% Late diagnosis (<350 CD4 mm3) -38.3% advanced infection (<200 CD4 mm3)	NR	NR	NR	NR	Conference abstract
Lugo RG 2012 [30] Spain Cross-sectional study	3 penitentiary institutions in Catalonia N=1,410	NR NR	All inmates At entry and during stay NR	NR	10.9 % overall -10.3% among males (majority between 25 and 39 years old) 17% among females (majority between 35 and 39 years old)	NR	NR	NR	NR	Conference abstract
Babudieri S 2015 [8] Italy Cross-sectional study	4 Italian prisons N=2,233	NR Opt-in	All inmates At entry and during stay NR	83.8%	87/2233 (3.9%)	NR	NR	NR	NR	Conference abstract
Babudieri S 2012 [9] Italy Cross-sectional study	20 Italian prisons N=4,072	NR Opt-in	All inmates At entry and during stay Peed educators and ID specialists	56.3%	5.6%	From 14.1% to 56.3%	NR	NR	NR	Conference abstract

Babudieri S 2008 [31] Germany, Italy Scotland, Spain, Ukraine Cross-sectional study	28 European prisons N=19,772	NR NR	All inmates At entry and during stay NR	12,560/19,772 (63.5%)	1,351/12,560 (10.8%) overall - 22.7% in IDU - 4.0% in foreigners -10.7% in men -11.1%% in women	NR	NR	NR	845/1,430 (59.1%)	Conference abstract
At entry and on release										
Jacomet, 2016 [2] France Cross-sectional study	Two prisons n=702	- At entry: ELISA - On release: rapid POC test Opt-in	Adult inmates At entry and on release (timing NR) Posters, personalised information letters	At entry: 91.3% On release: 4.2%	At entry: 0.3% (0% newly diagnosed) On release: 0%	NR	NR	NR	NR	Very low
At release										
Sieck, 2011 [1] USA Cross-sectional study	A male prison housing minimum, medium, close, and maximum security inmates n=916	Blood test, not further specified Mandatory	All inmates scheduled for release At release (4-6 weeks before scheduled release day) Letter describing STD testing process	NA	0.1%	NR	NR	NR	NR	Very low
Simonsen, 2015 [32] USA Cross-sectional study	One jail facility n=507	OraQuick rapid HIV test, confirmatory test not specified Opt-in	Jail inmates At release (during discharge proceedings) Educational materials, pre- and post-test counselling, active referral of positive testers to community-based care	60%	0.3%	NR	NR	100% received test result	100% (n=1)	Very low
Not specified										
Pearson, 2014 [33] USA	Two pairs of correctional facilities (no	NR NR	Admitted inmates NR	Facility pair 1: 48% Facility pair 2: 53%	NR	Combined log OR acceptance rate: 0.16 (95% CI -0.24-0.57)	NR	NR	NR	Moderate

Cluster-randomised trial	maximum security) n=3,300		**Intervention** Modified NIATx process improvement model* (staff receive HIV service training and are coached in the model)							
			Admitted inmates NR **Control** Staff only receive HIV service training	Facility pair 1: 49% Facility pair 2: 44%						
Ross, 2006 [34] USA Longitudinal study	Five randomly selected Project Wall Talk participating units vs. 5 matched non-participating units in one state n=590 peer educators and 2,506 student inmates (n=NR for non-participating units)	NR NR	**Project Wall Talk:** Peer educator inmates and student inmates NR Peer-education program (intensive training for peer educators, ongoing HIV education sessions given by peer educators to inmates)	NR	NR	At 12-month follow-up: p=0.000; OR: 2.76, 95% CI 2.21-3.44** At 18-month follow-up: p=0.000; OR: 1.78, 95% CI 1.40-2.25**	NR	NR	NR	Low
			Control: Prison unit inmates NR NR							
Gallego C 2010 [35] Spain Cross-sectional study	Prisons in Catalonia N=10,857	NR NR	All inmates NR NR	82.5%	769 (9.9%)	NR	NR	NR	600/769 (78%)	Conference abstract
Monarca R 2002 [36] Italy	Single prison in Italy N=320	NR Opt-in	All inmates NR	NR	85/320 (26.56%)	NR	NR	NR	NR	Conference abstract

Cross-sectional study			NR							

Ba=Baltimore, BBV=blood-borne virus, CI=confidence interval, *DC=District of Colombia,* DBST=dried blood spot testing, *ELISA=enzyme-linked immunosorbent assay, HBV=hepatitis B virus, HCV=hepatitis C virus, HIV=human immunodeficiency virus, ID=infectious diseases; IDU=injecting drug user*, ITT=intention to treat, *NIATx=Network for the Improvement of Addiction Treatment,* NR=not reported, OR=odds ratio, *Ph=Philadelphia,* RCT=randomised controlled trial*, RNA=ribonucleic acid, RR=relative risk, STD=sexually transmitted disease, USA=United States of America*

[1] Period of HIV testing provided only on request, if clinically indicated, or by court order (data not included in this table; positivity rate of 0.5%)

[2] Immediate (during initial medical screen on night of admission); early (during a physical examination the following evening); delayed (7 days after arrival)

[3] This article was included in the review of Rumble et al., 2015, which has a very low level of evidence

[4] Denominator is not the total number of inmates as in other studies, but inmates that were offered testing

**NIATx approach: begins with walking through the service delivery to see it from the service recipient's point of view and to detect difficulties. Next, the teams use rapid plan-do-study-act cycles: identify specific problems and generate solutions (plan), try out new processes (do), measure and assess the outcomes (study), and implement the solution or make additional changes (act). Local change teams repeat the cycle for any other problems discovered.*

*** Number of HIV tests/daily census at 12 months: project = 2.08%, control = 0.77%, at 18 months: project = 1.36%, control = 0.69%. As the denominator is the daily census, rates are not comparable to other studies, and therefore not added to the acceptance column of the table above.*

Web Table 8: Included records on active case finding for Chlamydia and Gonorrhoea

Reference, country, study design	Prison setting, sample	Testing method, offer	Who, when, promotion	Uptake	Positivity rate	Change in number or % tested	Change prevalence /incidence	Other	Treatment initiation	Level of evidence
At entry										
Mertz, 2002 [37] USA Cross-sectional study	2 county jails, 1 city jail, 1 detention centre n=NR (recruited inmates: County jail 1 n= 2,205 and county jail 2 & city jail n= 1,819; inmates gave consent: detention centre n=1,931)	LCx assay (urine) Opt-in	Women entering one of four jails At intake (county jail 1 within 8 hours, county jail 2 and city jail at median 2 days after intake, detention centre at median 11 days after booking) Active referral for treatment when released before knowing results	County jail 1: 90.7% County jail 2 and city jail: 85.1% Detention centre: 100%	Only stratified by age and ethnicity, see evidence tables	NR	NR	NR	County jail 1: 61% County jail 2 & city jail: 85% Detention centre: 76.8%	Very low
Arriola, 2001 [25]	Two adult county jails	NR Opt-in	All inmates	NR	Chlamydia: 6.5%	NR	NR	NR	Chlamydia: 79%	Very low

USA Cross-sectional study	n=NR		At intake (timing NR) Disease education, post-test counsel-ling		Gonorrhoea: 3.1%				Gonorrhoea: 66%	
During imprisonment										
Brown, 2014 [38] USA Case-control study	One metropolitan jail (senten-ced, awaiting trial, immigration violators) n=NR (n=394 tested)	PCR and DNA probe pro-tocol (urine) Opt-in	All inmates During imprisonment Education on STIs before choice to test, post-test counselling	NR	Chlamydia: 5.3% Gonorrhoea: 0.8%	NR	NR	NR	NR	Low
Newman, 2003 [39] USA Survey study	One main federal prison n=800	**Urine** vs. **vaginal swab** specimens Opt-in	All incarcerated women At a "call out" (rou-tinely used system to gather inmates in groups of 30) NR	- 82.1%, of which: - 97% both specimens - 1.5% swab only - 1.9% urine only	NR	NR	NR	NR	NR	Very low
Lopez-Corbeto E 2012 [40] Spain Cross-sectional study	3 prisons in Barcelona N=430 young inmates	Urine sample for Chlamydia trachomatis (CT) NR	All inmates During imprisonment NR	NR	- 39/430 (11%) -7 Spaniards -32 foreigners	NR	NR	-No use of condom in 70% of cases - Prison entry <1 year associated with OR 4.15 (CI 95%, 1.54-11.2) of CT diagnosis	NR	Conference abstract
Torrez E 2010 [41] Spain Cross-sectional study	1 youth prison in Barcelona N=430	Urine sample for Chlamydia tracomatis (CT) And Neisseria gonorrhoea (NG) By PCR	Young (<25 years old) inmates During imprisonment NR	418/425 (98.4%)	CT = 20(6%) NG = 1 (0.2%)	NR	NR	All CT cases were asymptomatic	NR	Conference abstract

		NR								
At release										
Sieck, 2011 [1] USA Cross-sectional study	A male prison housing minimum, medium, close, and maximum security inmates n=916	Genital swab test, not further specified* Opt-in	All inmates scheduled for release At release (4-6 weeks before the scheduled release day) Letter describing STD testing process	37.6%*	Chlamydia: 0.6% Gonorrhoea: 0.0%*	NR	NR	NR	NR	Very low
Opt-in during imprisonment, opt-out at entry										
Shaikh, 2015 [42] USA Cross-sectional study	One jail facility n=2,261 new inmates within 1 week and all inmates residing in housing units (n=NR)	DNA amplification probe protocol (urine) Opt-in	All inmates Weekly/bi-weekly education, followed by testing opportunity Education on STIs	NR	Chlamydia: 5.6% Gonorrhoea: 0.9%	Opt-in vs. opt-out: - Chlamydia: p=0.006 - Gonorrhoea: p=ns	NR	NR	NR	Low
		DNA amplification probe protocol (urine) Opt-out	All inmates At entry (timing NR) NR	NR	Chlamydia: 9.7% Gonorrhoea: 1.3%					
Opt-in at entry versus client-initiated										
Franklin, 2012 [43] USA Cross-sectional study	Jail system with 11 facilities (pre-trial and <1 year sentence) n=2,417	**At entry:** NAAT combination assay (urine) Opt-in	All newly incarcerated males who completed medical intake At entry (within 24 hours) STI clinic brochures, instruction to follow-up at clinic, letter of aftercare mailed to residential address	100%	6.4% chlamydia 0.9% gonorrhoea	NR	NR	*Sensitivity, specificity, and positive predictive value for positivity:* - Urethral symptoms: 2.5% (95% CI 0.8-6.7), 98.4% (95% CI 97.7-98.8), and 10.3% (95% CI 3.3-25.1), respectively - LET: 10.5% (95% CI 6.4-	63% prior to jail release	Very low
		Client-initiated:	All male inmates	NR	NR					

<table>
<tr><td></td><td></td><td>Laboratory urinalysis STI-specific testing (urethral swab)

Client-initiated</td><td>Based on self-reported symptoms or signs, or urine dipstick testing (including LET)

NR</td><td></td><td></td><td></td><td></td><td>16.5), 97.5% (95% CI 96.7-98.1), and 23.0% (95% CI 14.3-34.5), respectively</td><td></td><td></td></tr>
<tr><td>Broad, 2009 [44]

USA

Before-after study</td><td>One county jail (pre-detention)

n=NR</td><td>NAAT (urethral/cervical swab)

Opt-in</td><td>Universal program:
All inmates

All: at intake (timing NR)

NR</td><td>NR</td><td>NR</td><td>NR</td><td>Change reported cases after discontinuation of the universal program:
Chlamydia:<table><tr><td></td><td>Jail</td><td>Chicago</td></tr><tr><td>All</td><td>-82.3</td><td>-9.3</td></tr><tr><td>M</td><td>-91.7</td><td>-33.3</td></tr><tr><td>F</td><td>-20.3</td><td>2.5</td></tr></table>Gonorrhoea:<table><tr><td></td><td>Jail</td><td>Chicago</td></tr><tr><td>All</td><td>-70.9</td><td>-12.9</td></tr><tr><td>M</td><td>-90.5</td><td>-19.5</td></tr><tr><td>F</td><td>5.5</td><td>-5.6</td></tr></table></td><td>NR</td><td>NR</td><td>Very low</td></tr>
<tr><td></td><td></td><td>NAAT (urethral/cervical swab)

Client-initiated</td><td>Discontinuation program:
All inmates

Males: symptom-based; females: universal at intake (timing NR)

NR</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="11">Opt-out at entry versus client-initiated</td></tr>
<tr><td>Cole, 2014 [45]

USA

Before-after study</td><td>One county jail

n=17,065</td><td>NAAT (urine)

Opt-out</td><td>All female inmates

At entry (timing NR)

NR</td><td>78.1%

28.3% opted out in 1st year, 16.8% in 2nd year</td><td>Gonorrhoea: 2.5%
Chlamydia: 7.6%</td><td>Mean tests per month:
155 client-initiated vs. 455 opt-out (similar jail census during both periods, p not given)</td><td>Mean diagnoses per month:
9.3 client-initiated vs. 40.8 opt-out (similar jail census during both periods, p not given)</td><td>Acceptance 68% during first and 45% during last 3 months of year 2 (p<0.001)</td><td>69.5% (treatment rates remained constant during opt-in period)</td><td>Low</td></tr>
<tr><td></td><td></td><td>NAAT (urine)

Client-initiated</td><td>All female inmates

When inmates request it, or when reported symptoms/risk factors

NR</td><td>NR</td><td>NR</td><td></td><td></td><td>NR</td><td>NR</td><td></td></tr>
<tr><td colspan="11">At entry versus client-initiated</td></tr>
</table>

Pathela, 2009 [46] USA Before-after study	Six adult jails n=NR	**Active case finding program:** Dual NAAT (urine) NR	All incarcerated men aged ≤35 years At entry (within 72 hours) NR	NR	NR	NR	*In jails:* - Chlamydia: +1636% - Gonorrhoea: +885% *City-wide:* - Chlamydia: +59% - Gonorrhoea: +4%	NR	NR	Very low
		Before program: Diagnostic testing, not further specified Client-initiated	All incarcerated men When reporting complaints NR							

CI=confidence interval, CT= Chlamydia trachomatis, DNA= deoxyribo nucleic acid, LCx=ligase chain reaction, LET=leukocyte esterase test, NAAT=nucleic acid amplification technology, NG= Neisseria gonorrhoea, NR=not reported, OR=odds ratio, PCR=polymerase chain reaction, STD=sexually transmitted disease, STI=sexually transmitted infection, USA=United States of America

**An opt-in physical examination for herpes simplex virus and human papillomavirus was also offered; 44.7% of inmates accepted the physical exam, 2.2% were found to be infected with human papillomavirus, none with herpes simplex virus*

Web Table 9: Included records on active case finding for Syphilis

Reference, country, study design	Prison setting, sample	Testing method, offer	Who, when, promotion	Uptake	Positivity rate	Change in number or % tested	Change prevalence /incidence	Other	Treatment initiation	Level of evidence
At entry										
Kahn, 2002 [47] USA Cross-sectional study	One jail (awaiting trial or sentence <1 year) n=50,941	RPR (blood), MHA-TP confirmatory test Opt-in	All inmates entering jail At entry (within 24 hours) NR	76%	6% confirmed syphilis 1.3% diagnosed untreated syphilis	NR	*From start to 4 years later:* Untreated syphilis in jail: -64% Early syphilis in jail: -68% Early syphilis in community: -79%	NR	NR	Very low
Arriola, 2001 [25] USA Cross-sectional study	One adult county jail n=NR	NR Opt-in	Inmates At intake (3 days after admission) Disease education, post-test counselling	NR	2.0%	NR	NR	NR	100%	Very low

Silberstein, 2000 [48] USA Cross-sectional study	One jail (awaiting trial or sentence <1 year) n=26,829	RPR (blood), MHA-TP confirmatory test NR	All inmates entering jail At entry (within 24 hours) NR	69%	1.4% confirmed syphilis	NR	Prevalence syphilis from year 1 to 2: -35%	Estimated 6.42 total case-equivalents of congenital and 43.74 total case-equivalents of late/ neurosyphilis were prevented	56.7%	Very low
Heimberger, 1993 [49] USA Cross-sectional study	One jail (awaiting trial or sentence <1 year) n=12,685	ART (blood), FTA-ABS confirmatory test NR	All inmates entering jail At entry (within 24 hours) NR	77%	2.6% confirmed syphilis 1.6% newly diagnosed syphilis	NR	NR	NR	83.5%	Very low
During imprisonment										
Sagnelli, 2012 [6] Italy Cross-sectional study	Six penitentiaries n=3,468	TPHA, confirmed with FTA-ABS or VDRL tests Opt-in	All inmates During imprisonment Presentation on advantages of screening by peer-educators, pamphlets on importance of screening	55.7%	2.1%	Higher acceptance than in the nine correctional facilities evaluated in this study before peer-education (10.0%)	NR	NR	NR	Very low
Babudieri S 2012 [9] Italy Cross-sectional study	20 Italian prisons N=4,072	Test for syphilis (ELISA) -TPHA and VDRL offered to positive patients at screening NR	All prisoners During imprisonment NR	56.3%	- 2.3% ELISA Of ELISA screening positive cases: TPHA+, FTA-abs positive (85.7%)	NR	NR	NR	NR	Conference abstract
Foschi A 2015 [5] Italy	Single prison in Italy (Opera prison, Milan)	Syphilis Serology Opt-in	All newly incarcerated prisoners At entry	511/711 (71.8%) reached	17/468 (3.6%)	NR	NR	NR	NR	Conference abstract

Cross-sectional study	N=711		Pre-emptive counselling	for screening 468/511 (91.5%) accepted to be screened						
At release										
Sieck, 2011 [1] USA Cross-sectional study	A male prison housing minimum, medium, close, and maximum security inmates n=916	Blood test, not further specified Mandatory	All inmates scheduled for release At release (4-6 weeks before the scheduled release day) Letter describing STD testing process	NA	0.1%	NR	NR	NR	NR	Very low

ART=automated reagin test, CI=confidence interval, ELISA=enzyme-linked immuosorbent assay, FTA-ABS=fluorescent treponemal antibody absorbed, MHA-TP=microhemagglutination for Treponema pallidum, NA=not applicable, NR=not reported, OR=odds ratio, RPR=rapid plasma reagin, STD=sexually transmitted disease, TPHA=Treponema pallidum hemagglutination assay, VDRL=Venereal Disease Research Laboratory, USA=United States of America

Web Table 10: Included records on active case finding for Trichomoniasis

Reference, country, study design	Prison setting, sample	Testing method, offer	Who, when, promotion	Uptake	Positivity rate	Change in number or % tested	Change prevalence /incidence	Other	Treatment initiation	Level of evidence
Opt-in at entry versus client-initiated										
Roth, 2011 [50] USA Before-after study	One privately operating minimum security facility Universal: n=471 Client-initiated: n=362	**Universal:** PCR Opt-in	All incarcerated women At entry (timing NR) NR	NR	44%	NR	NR	NR	NR	Very low
		Client-initiated: PCR Client-initiated	Incarcerated women with symptoms At entry (timing NR) NR	NR	14%					
Opt-in at release										
Sieck, 2011 [1] USA	A male prison housing minimum, medium, close,	Genital swab test, not further specified	All inmates scheduled for release	37.6%	5.5%	NR	NR	NR	NR	Very low

Cross-sectional study	and maximum security inmates n=916	Opt-in	At release (4-6 weeks before the scheduled release day) Letter describing STD testing process							

NR=not reported, PCR=polymerase chain reaction, STD=sexually transmitted disease, USA=United States of America

Web Table 11: Included records on active case finding for active TB

Reference, country, study design	Prison setting, sample	Testing method, offer	Who, when, promotion	Uptake	Positivity rate	Change in number or % tested	Change prevalence /incidence	Other	Treatment initiation	Level of evidence
At entry										
Ritter, 2012 [51] Switzerland Cross-sectional study	Largest remand prison n=4,890	TST, followed by CXR and culture test Opt-in	Inmates entering prison At entry (within 7 days of admission) NR	77.3% TST 67.1% CXR of TST-positives	46.9% TST-positive 2.3% confirmed TB	NR	NR	NR	NR	Very low
Saunders, 2001 [52] USA Surveillance study	One federal detention centre n=NR	*January-May 1998* TST, and routine screening of symptoms, followed by radiography and culture test NR	Inmates entering detention centre At entry (TST within 48 hours of admission) NR	NR	NR	NR	Eightfold increase in isolations for suspected pulmonary TB in June-December 1998 compared to January-May 1998 (from 8 to 64)	Time to isolation of suspected TB cases decreased in June-December 1998 compared to January May 1998 (from 96 to ≤24 hours from time of admission)	NR	Very low
		June-December 1998 CXR in addition to screening above NR	Inmates entering detention centre At intake (CXR directly at intake) NR	NR (91% of inmates screened with CXR also had TST reading)	40% TST-positive					
Puisis, 1996 [53] USA Before-after study	One county jail -1991-1992: n=62,281	*March 1991-February 1992* TST, followed by CXR and culture test	Inmates entering jail At intake (timing NR) NR	75% TST	11.6% TST-positive 0.06% confirmed TB	NR	NR	NR	NR	Very low

	-1992-1994: n=NR (n=126, 608 screened)	NR *March 1992-February 1994* Miniature CXR only, followed by culture test NR		 NR	 0.3% suspicious radiographs 0.05% confir-med TB (0.03% newly diagnosed TB)					
Bös L, 2011 [54] Germany Retrospective study	Prison Hospital in Berlin All prisoners (n=NR)	Chest X-ray Opt-in	Inmates, not further specified At entry NR	100%	62 cases of active TB	NR	NR	The affected prisoners were mainly male (93.6%) and were of a foreign nationality in the majority of cases (61.3%) 22.6% of the affected prisoners were asymptomatic at entry into the prison, 25% reported only dry or productive cough	87.1%	Unpublish ed research
During imprisonment										
Kiter, 2003 [55] Turkey Longitudinal study	One district prison n=NR	Miniature CXR, followed by standard CXR and culture test Opt-in	Prison inmates Yearly during impri-sonment Informed about TB and its control, re-luctant prisoners are encouraged by other inmates/staff	99.8%	3.2% abnormal miniature CXR and/or symptoms 0.4% confirmed TB (of which 72.7% newly diagnosed)	NR	NR	NR	100%	Very low
At entry and during imprisonment										
Martin, 2001 [56] Spain	One prison n=3,081	TST, followed by CXR and sputum examination NR	Inmates entering prison At entry (timing NR), and annually when not ill, or twice-	At entry: 82.5% TST	At entry: 0.24% During imprisonment: 2.2% (6.39/ 1000/year)	NR	NR	Inmates who did not submit to LTBI therapy showed greater probability of developing TB (adjusted RR 8.32,	NR	Very low

Longitudinal study			yearly radiograph if necessary NR					95% CI 1.1-63.5, p= 0.04) compared to those submitting to LTBI therapy		
Andreev V, 2011 [57] Bulgaria Prospective study	One prison n=600	Symptom questionnaire, bacteriology and chest radiography NR	Inmates, not further specified At entry and during imprisonment NR	NR	2/600 (0.3%)	NR	NR	NR	100%	Conference abstract
Timing not specified										
Miller, 2006 [58] USA Cross-sectional study	County jail facilities n=22,920	TST, followed by additional evaluation (not further specified) Mandatory	Jail inmates NR NR	NA	1.3% TST-positive 0.03% confirmed TB	NR	NR	NR	100%	Very low

ACF=acid-fast bacilli, CI=confidence interval, CXR=chest x-ray, LTBI=latent tuberculosis infection, NA=not applicable, NR=not reported, TB=tuberculosis, TST=tuberculin skin test

Web Table 12: Included records on active case finding for LTBI

Reference, country, study design	Prison setting, sample	Testing method, offer	Who, when, promotion	Uptake	Positivity rate	Change in number or % tested	Change prevalence /incidence	Other	Treatment initiation	Level of evidence
At entry										
Martin, 2001 [56] Spain Longitudinal study	One prison n=3,081	TST, followed by CXR and sputum examination NR	Inmates entering prison At entry (timing NR), and annually when not ill, or twice-yearly radiograph if necessary NR	82.5% TST	41.3%[1]	NR	NR	NR	23.0%	Very low
Bock, 2001 [59] USA Longitudinal study	One county jail n=NR	TST, followed by CXR NR	All inmates admitted to jail At entry (timing NR) NR	75% TST	7.2% TST-positive	NR	NR	NR	NR	Very low
Foschi A 2015 [5]	Single prison in Italy (Opera prison, Milan)	TST, IGRA in TST positive	All prisoners At entry	81.4%	TST positivity rate=9.8%	NR	NR	NR	NR	Conference abstract

Italy Cross-sectional study	N=711	Opt-in	Motivational counselling		TST+IGRA positivity rate= 48.3%					
Ruiz Rodriguez 2010 [60] Spain Cross-sectional study	Spanish penitentiary system N=24,101	TST NR	All prisoners At entry NR	11.6% tested with TST	NR	NR	NR	NR	NR	Conferenc e abstract
Solè M 2010 [61] Spain Prospective study	Single prison in Catalonia N=134	TST NR	Foreign prisoners with unknown TB status At entry NR	100%	63 (49.3%)	NR	NR	In multivariate analysis, only age (<40 years) associated with TST positivity (OR 2.34, CI95% 1.39-3.94).	NR	Conferenc e abstract
Garcìa Guerrero J 2010 [62] Spain Cross-sectional study	18 prisons in Spain N= 378	TST NR	Randomly selected patients At entry NR	90.2%	50.4%	NR	NR	The logistic regression model showed the independent association of TST positivity with: age >40 years (OR: 1.76; CI: 1.08-2.87; p=0.024) and length of prison stay >5 years (OR: 2.50; CI: 1.41-4.43; p=0.002	NR	Scientific paper (Rev Esp Sanid Penit 2010; 12: 79-85)
Martìn, 2001 [63]	One prison	- TST: Man-toux	Prisoners without previous active TB from September 1995 to June 1999	NR	Positivity rate at second TST: 11.7% (56/478)	NR	NR	NR	NR	Scientific paper (Rev Esp Sanid

Spain Cross-sectional study	478 prisoners with first negative TST result	- TST repeated after 7-10 days to prisoners with negative result at first TST Voluntary	At prison entry NR		In the multivariate analysis, inmates older than 34 (OR = 3.63, CI 1.9-6.8) and showing signs of induration in the first test (OR = 8.9, CI 48-17.9) demonstrated higher positivity rates in the second TST					Penit 2001; 3: 72-76)
During imprisonment										
Sagnelli, 2012 [6] Italy Cross-sectional study	Six penitentiaries n=3,468	PPD test Opt-in	All inmates During imprisonment Presentation on advantages of screening by peer-educators, pamphlets on importance of screening	42.8%	17.2%	Higher acceptance than in the nine correctional facilities evaluated in this study before peer-education (11.3%)	NR	NR	NR	Very low
Ruiz-Rodríguez 2010 [64] Spain Retrospective, longitudinal cohort study	Single prison (Centro Penitenciario de Albolote) N= 197	TST NR	Prisoners with first negative TST and TST repeated in the period considered During imprisonment NR	100%	38 (19.3%) tested positive at TST during the period considered.	NR	NR	No prisoner exposed to active TB cases became TST positive. HIV infection increased the risk of TST positivity (OR 3.82, CI 1.003-24.87)	NR	Conferenc e abstract
Vera 2010 [65] Spain Retrospective, longitudinal cohort study	18 prisons in Spain N= 378 prisoners	TST NR	21 prisoners for each prison During imprisonment NR	90.2%	50.4%	NR	NR	Risk factors: -Age > 40 years -Prison stay > 5 years	NR	Conferenc e abstract

Fernàndez-Prieto P 2010 [66] Spain Retrospective study	Single prison in Spain N= 2871 prisoners	TST NR	All prisoners During imprisonment NR	92.6%	21.8%	NR	NR	NR	NR	Conference abstract
Gabbuti A 2010 [67] Italy Retrospective longitudinal study	Single prison in Italy (Sollicciano, Tuscany) N=7,500	TST Opt-in	All prisoners During imprisonment NR	15.4%	TST >5 mm: 482/1160 (41.6%) Percentage of TST conversion (2004-2009): 128/ 1160 (11.x%)	NR	NR	NR	NR	Conference abstract
Babudieri S 2012 [9] Italy Cross-sectional study	20 Italian prisons N=4,072 detainees	TST Opt-in	All prisoners During imprisonment Peer educators and ID specialist intervention to increase TB screening uptake	NR	21.8%	Percentage of tested inmates increased from 11.3% (pre intervention) to 26.3% (post intervention)	NR	NR	NR	Conference abstract
At entry and during imprisonment										
Vera-Remartinez 2014 [68] Spain Longitudinal study, observational cohort study	Single prison (Centro Penitenciario Castellon I) NR	TST NR	Inmates, not further specified At entry and during imprisonment (every 6 months) NR	100%	44.9%	NR	In new entries positivity rate was: 7.3% at 6 months 11.9% at 12 months 12.5% at 18 months In previous residents: 10.6% at 6 months 15.1% at 12 months 18% at 18 months	Overall risk of TST positivity associated with: -Male sex, OR 1.91 (95% CI 1.05-3.95) -Foreigner, OR 2.25 (95% CI 1.374- 3.61) -Previous IDU, OR 3.05 (95% CI 1.85-5.05)	NR	Conference abstract

Ruiz-Rodríguez 2014 [69] Spain Cross-sectional study	Single prison (Centro Penitenciario de Albolote) N=158 female prisoners	TST NR	Inmates, not further specified At entry and during imprisonment NR	99.4%	69 (43.9%) 14 (20.3%) converters)	NR	NR	Risk increased in patients with >49 years (RR =3.61) No difference between Spaniards and foreigners	NR	Conference abstract
Timing not specified										
Miller, 2006 [58] USA Cross-sectional study	County jail facilities n=22,920	TST, followed by additional evaluation (not further specified) Mandatory	Jail inmates NR NR	NA	0.9% treatment for LTBI prescribed	NR	NR	NR	57%	Very low
Bock, 1999 [70] USA Cross-sectional study	One pre-trial detention centre n=NR (1,863 screened)	TST, followed by CXR NR	Inmates NR NR	NR (74% of inmates under-going TST returned for TST reading)	18% TST-positive	NR	NR	NR	58%	Very low

CI=confidence interval, CXR=chest x-ray, ID= infectious diseases; LTBI=latent tuberculosis infection, NR=not reported, OR=odds ratio, PPD=purified protein derivative, RR=relative risk, TST=tuberculin skin test

[1]It might be that the 41.3% inmates infected with M. tuberculosis *are 6 with active TB and 1,044 with LTBI, however this is not completely clear from the article as it seems that 397 of the 1044 do not seem to be TST positive. Therefore it is unclear whether there are 1,044 or 647 (1,044-397) inmates with LTBI at entry*

*51 (40%) did not complete due to: release in 25 (49%), drop out because of concomitant -methadone therapy in 10 (19.6%), cultural refuse in 12 (23.5%), religious refuse in 3 (5.9%)

Web Table 13: Included studies reporting economic analysis on active case finding in prison settings

Reference, country	Study design, scenarios	Level of evidence
HCV		
Castelnuovo 2006 [71], UK	Cost-effectiveness study Comparison between different HCV case finding scenarios among former injecting drug users in prison	Moderate
Sutton 2008 [72],	Cost-effectiveness study	Moderate

UK	Comparison between different HCV case finding scenarios among former injecting drug users in prison	
Martin 2013 [73], UK	Cost-effectiveness study Comparison between HCV case finding among inmates who inject drugs using DBST or venepuncture	Moderate
Sutton 2006 [74], UK	Cost-effectiveness study Comparison between different HCV case finding scenarios among former injecting drug users in prison	Low
He 2016 [75], USA	Cost-effectiveness study Comparison between different HCV case finding scenarios including targeted testing for former injecting drug users in prison and universal testing	Moderate
HIV		
Resch 2005 [76], USA	Cost-effectiveness study Comparison between different HIV case finding scenarios for pregnant women	Moderate
Varghese 2001 [77], USA	Cost-effectiveness study Comparison between universal HIV case finding at release with no intervention	Low
Spaulding 2015 [18], USA	Cross-sectional study Estimate the cost per new HIV diagnosis	Very low
Shrestha 2009 [22], USA	Cross-sectional study Estimate the cost per new HIV diagnosis	Very low
Chlamydia and gonorrhoea		
Gift 2006 [78], USA	Cost-effectiveness study Comparison between different case finding scenarios among male inmates	Very low
Gopalappa 2013 [79], USA	Cost-effectiveness study Comparison between different case finding scenarios among male inmates	Very low
Kraut-Becher 2004 [80], USA	Cost-effectiveness study	Very low

	Comparison between different case finding scenarios among male and female inmates	
Active TB		
Winetsky 2012 [81], Latvia	Cost-effectiveness study Comparison between different case finding scenarios and diagnostic algorithm	Moderate
Jones 2001 [82], USA	Cost-effectiveness study Comparison between different case finding scenarios and diagnostic algorithm	Low
Miller 2006 [58], USA	Cross-sectional study Economic evaluation of a state-mandatory screening program	Very low

DBST: dried blood spot testing

Web Table 14: Included studies reporting other data/only qualitative data on active case finding in prison settings

Reference, country	Study design, sample	Level of evidence
HCV		
Nijhawan 2010 [83], USA	Survey study n=100 female inmates	Very low
Vallabhaneni 2006 [84]USA	Survey study n=153 inmates	Very low
HIV		
Burchell 2003 [85], Canada	Survey study n=595 inmates	Very low
Grodensky 2015 [86], USA	Survey study n=871 inmates	Very low
Sabin 2001 [87], USA	Surveillance study n=NR	Very low
Seth 2015 [88], USA	Surveillance study n=NR	Very low
Chlamydia and gonorrhoea		
Nijhawan 2010 [83],	Survey study	Very low

USA	n=100 female inmates	
TB		
Aerts 2006 [89], Europe	Survey study n=NR (representatives of 22 countries)	Very low
Binswanger 2010 [90], USA	Survey study n=1,174 jail administrators	Very low

NR=not reported

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