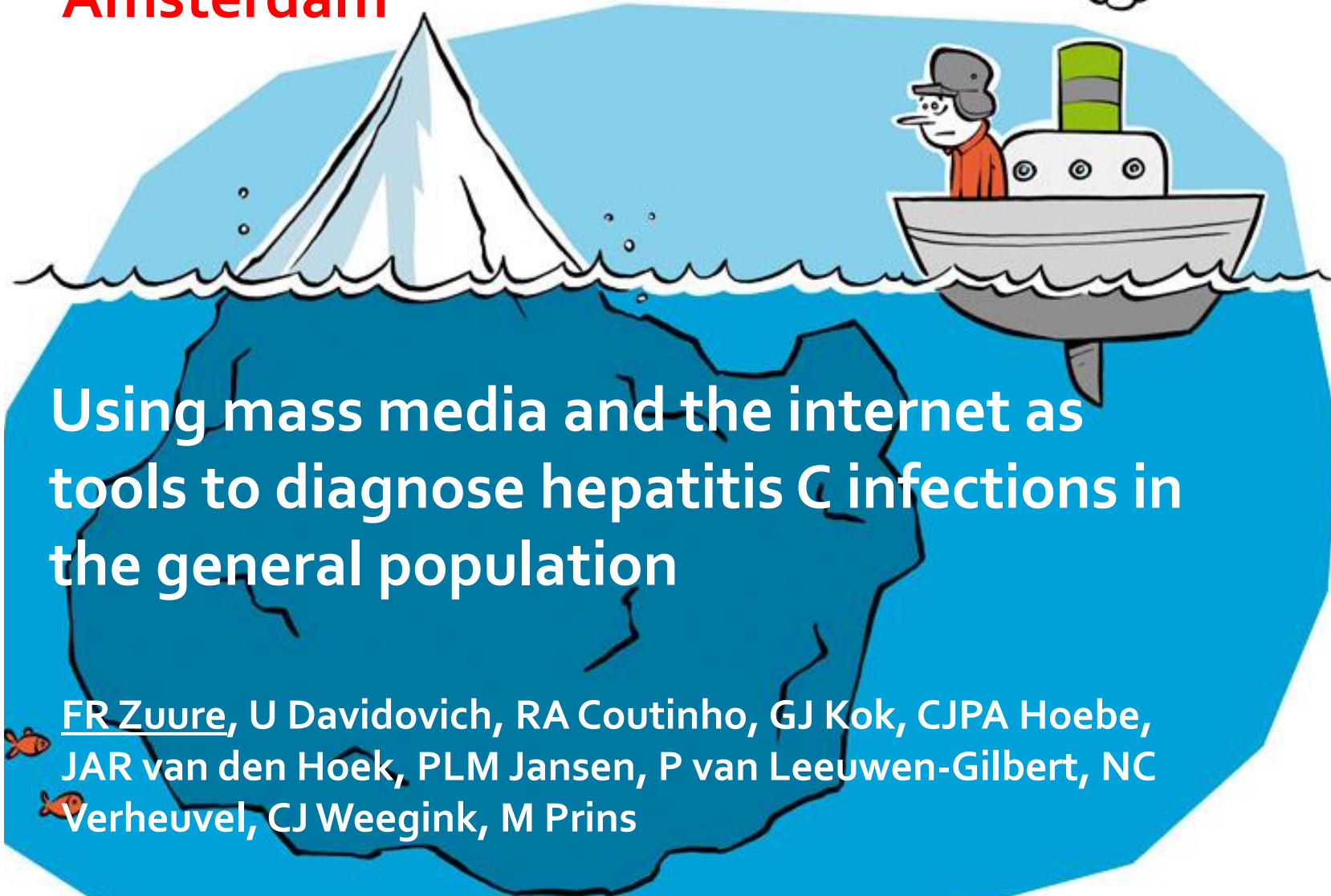




GGD

Amsterdam

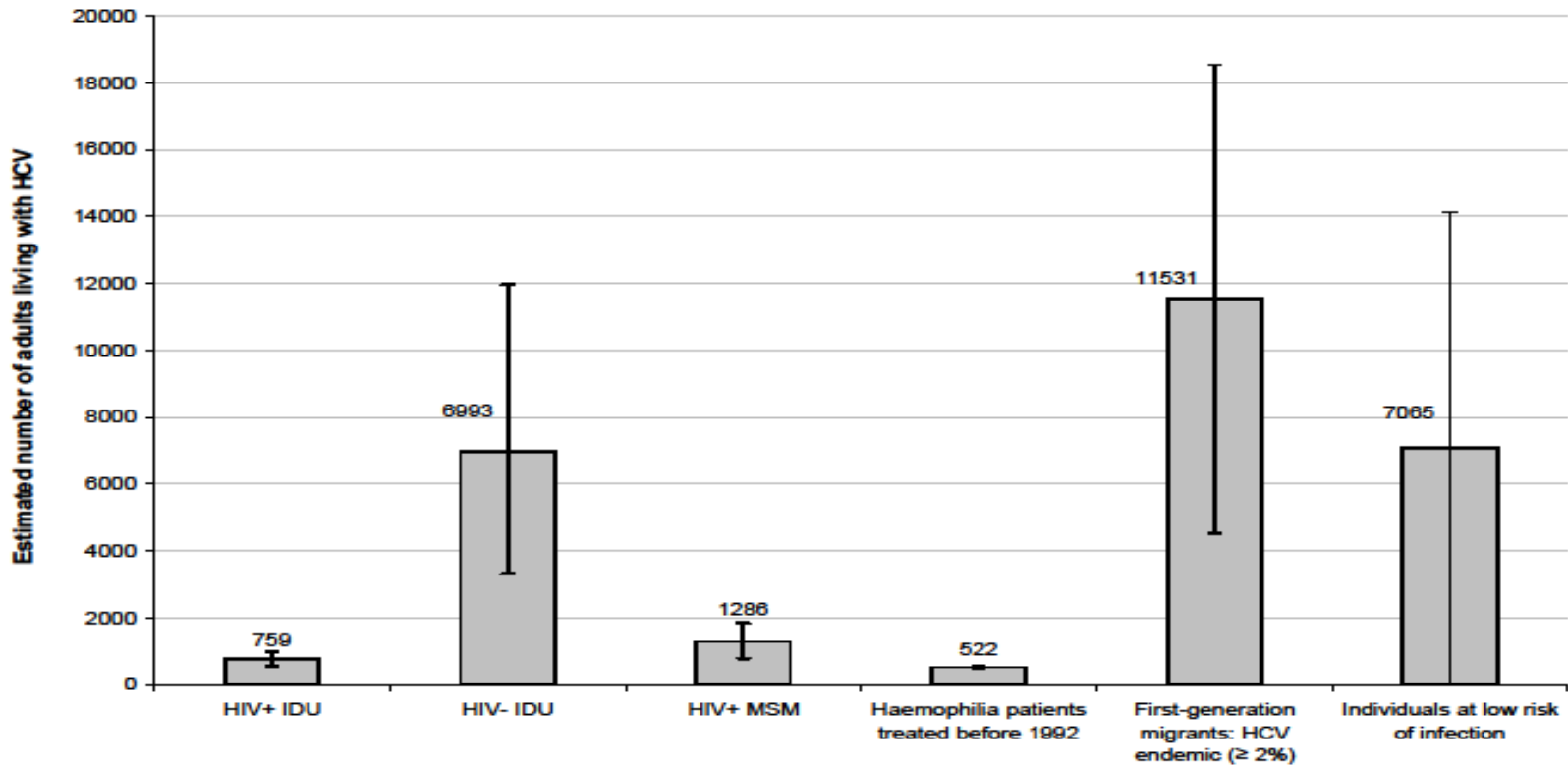


Using mass media and the internet as tools to diagnose hepatitis C infections in the general population

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✘ Estimated number of adults (aged 15-79 years) living with HCV antibodies in the Netherlands, per main subgroup, 2009



Overall prevalence for the population aged 15-79 years:

0.22% (min 0.07%, max 0.37%)

28,100 HCV-infected individuals (min n=9600, max n=48000)

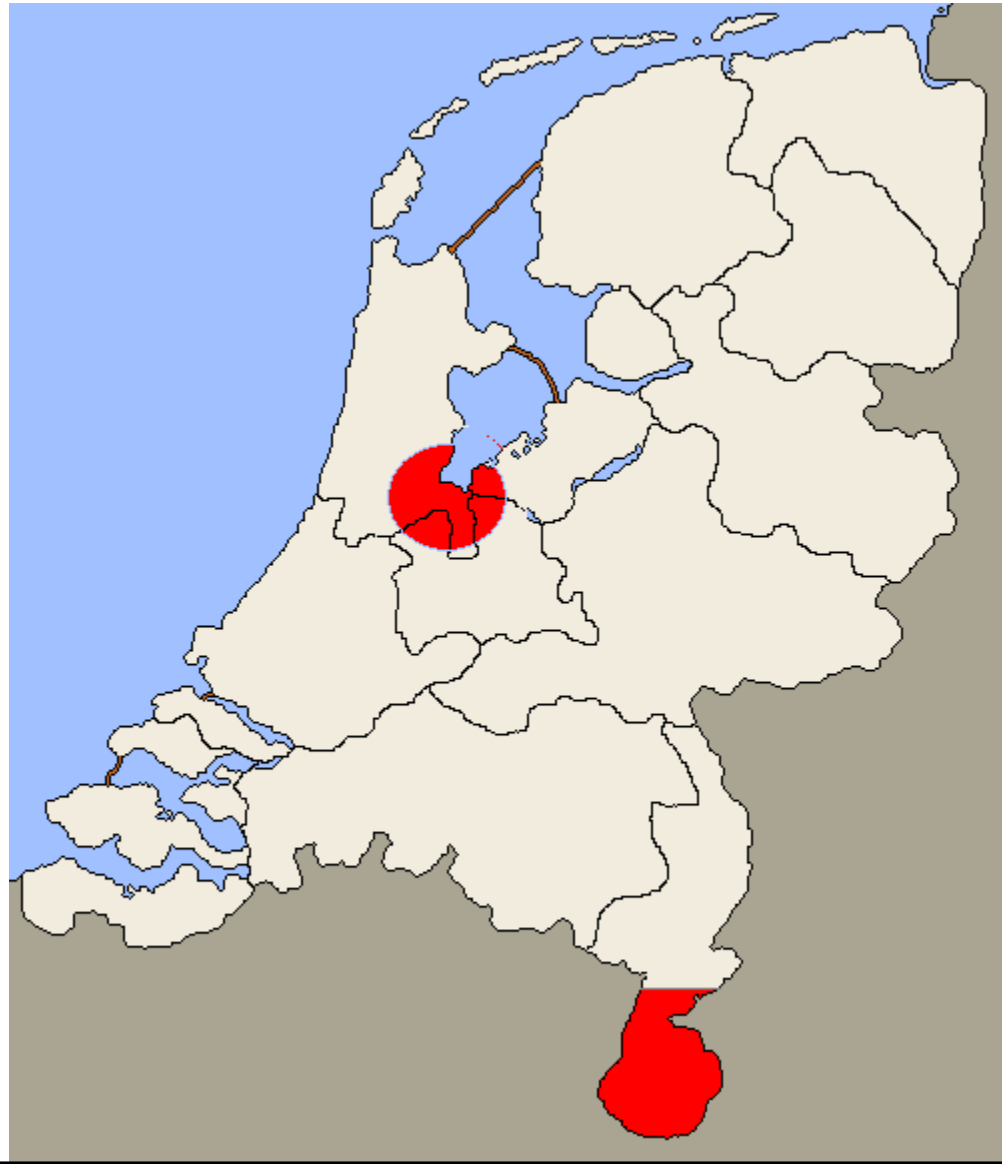
✘ ✘ ✘ Hepatitis C Internet Project (HIP)

Overall aim:

To evaluate whether a **hidden population** of HCV-infected individuals can be identified through a public **media campaign** alongside an **internet risk assessment** and **low-threshold blood screening** procedure

✖ ✖ ✖ HIP details

- Pilot project in the Netherlands
- Amsterdam and South Limburg
- Aim: to test ~6,000 individuals at risk for HCV infection



XXX HIP strategy

1. Public, regional media campaign



XXX HIP strategy

1. Public, regional media campaign
2. Tailored HCV risk assessment questionnaire at WWW.HEPTEST.NL

The screenshot shows a web browser window with the title "Hepatitis C risicotest, GGD Amsterdam en Zuid Limburg - Gratis test op heptest.nl - GGD Amsterdam". The address bar shows "http://www.heptest.nl/site/index.php?ndlang=en". The main content area is titled "Hepatitis C risk test" and contains a question: "Have you ever injected drugs?". Below the question are two radio buttons: "Yes" and "No". There are "back" and "forward" navigation buttons. To the right of the question is a box titled "Additional information" which contains text about HCV transmission: "Drugs may be taken in different ways, for example, by means of smoking, swallowing or injection. Hepatitis C may be transmitted in the process of injecting drugs with needles that do not come directly out of their wrappings. In addition, the use of other materials (including wads of cotton wool or syringes) that were used before, may lead to hepatitis C because such materials may contain another person's blood (remains). Under such circumstances, hepatitis C may be transmitted by a single drug injection." At the bottom of the page, there are links for "Contact", "Disclaimer", and "Information for professionals".

Questionnaire was evaluated before its online use in a study among liver patients with known HCV status (before HIP):

Sensitivity: 84.6%

Specificity: 63.8%



HIP strategy

1. Public, regional media campaign
2. Tailored HCV risk assessment questionnaire at WWW.HEPTEST.NL
3. Free and anonymous blood test

			
Lab-formulier Hepatitis C internetproject			
N.B. Dit is een anoniem onderzoek			
Bloedafname			
Datum aanvraag:	26-09-2007		
Persoonlijke code/ Gebruikersnaam patiënt:	A3694006687		
Postcode cijfers:	1339		
Gebortedatum:	21-03-1980	Geslacht:	Vrouw
Adres:	Nieuwe achtergracht 100 1018 WT Amsterdam		
Verzekering bti:	GGD		
Aanvrager: code 3045	GGD Amsterdam, Afd. Infectieziekten, HIP Dr. JAR van den Hoek Arts-epidemioloog GGD Postbus 2200 1000 CE Amsterdam		
Aan te vragen test:	serologie/immunologie S101, anti HCV IgG		
Please take this form with you to the laboratory.			



HIP strategy

1. Public, regional media campaign
2. Tailored HCV risk assessment questionnaire at WWW.HEPTEST.NL
3. Free and anonymous blood test
4. Free and anonymous confirmation test at the Public Health Service
5. Direct referral to a specialist at the hospital



Additional online services

1. Free email and/or SMS reminder for blood testing
2. Online planning tool to set goal intentions for blood testing
(“Implementation intentions”, Gollwitzer, *Am. Psychol.* 1999)
3. Free email and/or SMS alert when the test’s result could be obtained online



Evaluation studies

1. The use and feasibility of the test service
2. The efficacy of the service in tracing HCV-infected individuals
3. The perceived usability and acceptability of the service



Methods

Data collection: April 2007 – December 2008

Use and feasibility:

number of website visitors, completed risk questionnaires, advice compliant participants, results obtained

Efficacy:

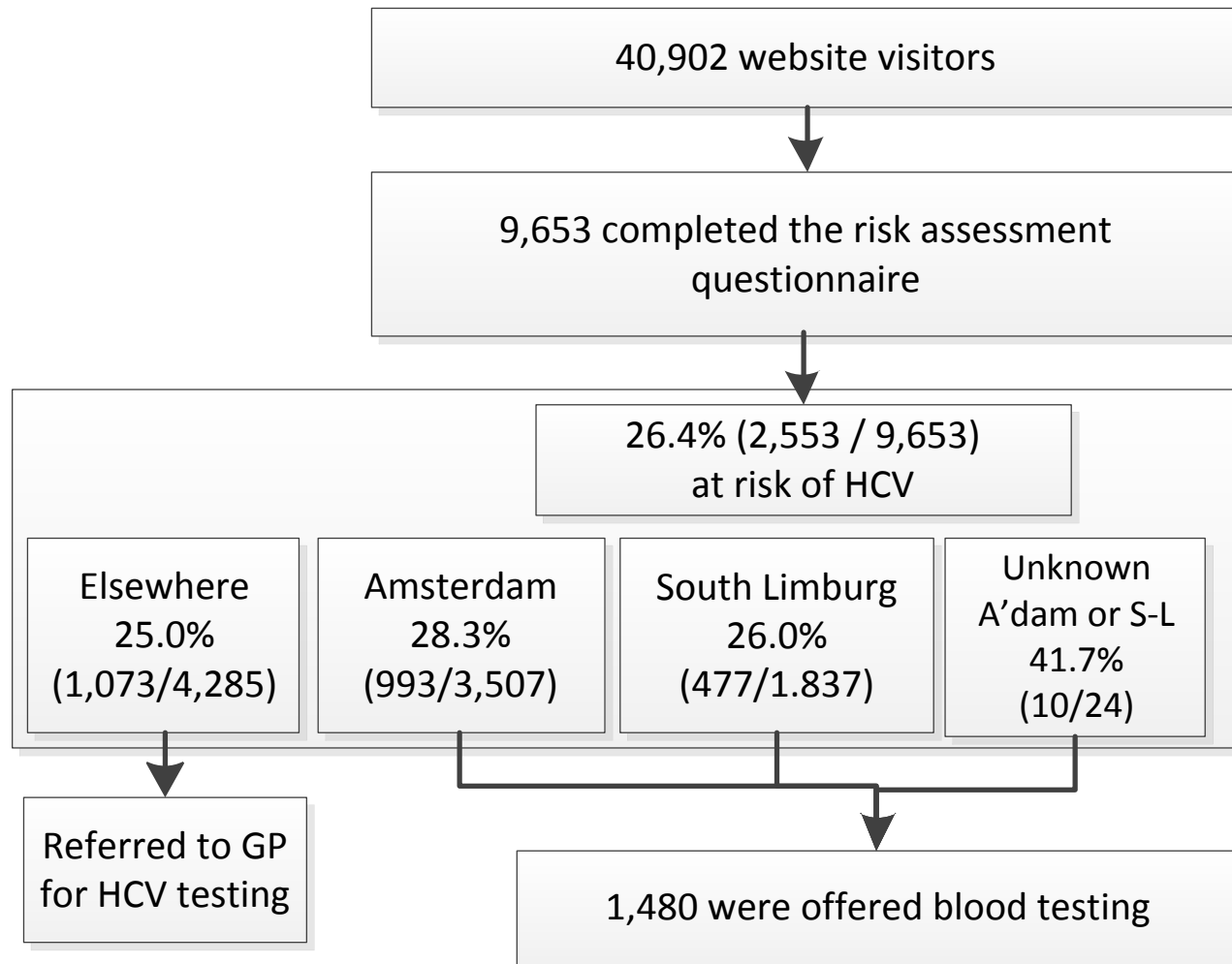
Number of diagnosed HCV-infected individuals, referrals to hospital, treated patients

✖ ✖ ✖ **Methods**

Usability and acceptability study

- Additional online questionnaire, offered to all participants who completed the risk assessment
- Measures (5-points scales):
 - Usability: 'ease of use' (n=4, $\alpha=.81$) and 'usefulness' (n=5, $\alpha=.89$)
 - Acceptability of online risk test (n=4, $\alpha=.87$)
 - Acceptability of a hypothetical paper&pencil risk test (n=4, $\alpha=.92$)

XXX Results: Usage





Reported HCV risk	N=1480
Having received blood (products) prior to 1992	628 (42.4)
Non-injecting illicit drug use for ≥ 3 times a week during a period of ≥ 3 months	342 (23.1)
Medical/dental surgery in medium- to high-risk countries ^a	209 (14.1)
Living together for >1 year and sharing bathroom items with HCV-infected individuals or IDU	164 (11.1)
Ritual intervention such as a circumcision or scarification in medium- to high-risk countries ^a	141 (9.5)
Tattoo in medium- to high-risk countries ^a	134 (9.1)
Former IDU	62 (4.2)
Needle-stick injury with needle of high-risk people (IDU, hemophiliacs, dialysis patients, HCV-infected individuals)	41 (2.8)
Exposure of healthcare workers to blood/tissue in medium- to high- risk countries ^a	41 (2.8)
HCV-infected mother	40 (2.7)
Body-piercing in medium- to high-risk countries ^a	36 (2.4)
Being born in a HCV-endemic country	28 (1.9)
Having received blood (products) in medium- to high-risk countries ^a	14 (0.9)
Mother is/was IDU	12 (0.8)
Needle-stick injury in HCV-endemic countries	6 (0.4)



1,480 were offered blood testing



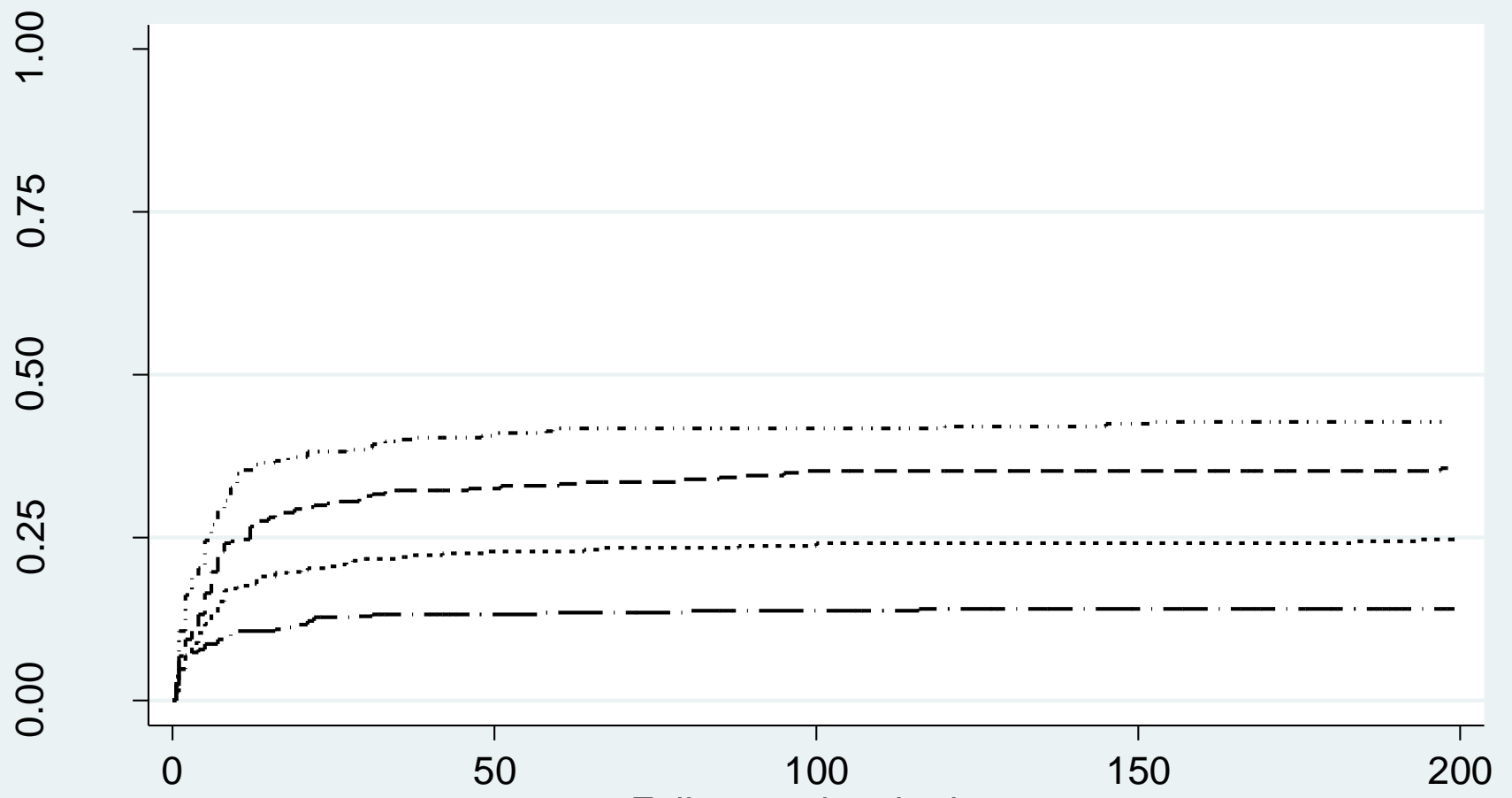
28.4% (420/1,480) printed the referral form and visited the laboratory for testing



Determinants of test advice compliance

- Older age
- Higher educational level
- Residence in South Limburg compared to Amsterdam
- Living near a laboratory
- Not having health insurance
- Having subscribed to the reminder service
- HCV risk group

XXX
XXX
XXX



— · — up to 31 years ····· 32 - 45 years
- - - 46 - 54 years - · - · - 55 - 95 years



1,480 were offered blood testing



28.4% (420/1,480) printed the referral form and visited the laboratory for testing



95.5% (401/420) obtained test result online



3.6% (15/420; 95%CI=2.1-5.7) tested HCV ab positive



12/15 HCV RNA positive



Risk factors and clinical follow-up of chronically infected persons

Self-reported risk factors:

- 11/12 former injection drug use
- 1/12 blood transfusion prior to 1992

Clinical follow-up (2010):

- 3 reached SVR
- 3 were under treatment
- 4 were awaiting new treatment options
- 2 were lost to follow-up



Results: U&A study

- 2,154/9,653 (22,3%) individuals participated in the usability and acceptability study
- Females, older aged, and testing-advice-adherent participants were significantly more willing to participate in the usability & acceptability study



Results (n=2,154)

	Mean score 5 point scale	Std. deviation
Usability: risk questionnaire's ease of use	4.8	0.4
Usability: risk questionnaire's usefulness	4.4	0.7
Acceptability: online risk assessment	4.6	0.6
Acceptability: hypothetical paper risk assessment	2.9	1.1



Conclusions (1/2)

Usability and acceptability

- Usability and acceptability as perceived by participants is high

Use and feasibility

- Testing procedure using the internet works well
- Blood test advice uptake (28%) is much higher compared to similar projects

✘ ✘ ✘ Conclusions (2/2)

Efficacy

- Risk assessment questionnaire selects high risk groups as the HCV prevalence among testers (3.6%) is 16 times the estimated prevalence among the general Dutch population (0.22%)
- Website attracted less persons at risk of HCV than expected, and therefore the number of identified HCV infected individuals is low
- The project succeeded in identifying HCV-infected individuals who belong to hidden risk groups for HCV



Continuation

New project: HepC Test@Home

Home-based HCV RNA testing in combination with internet counseling for HIV+ MSM

- HIV+ MSM are main risk group for HCV transmission in the Netherlands
- Aim: increase earlier testing and treatment to stop transmission
- Online risk assessment questionnaire for acute HCV among HIV+ MSM (Newsum et al, manuscript in preparation)
- Home-based HCV RNA testing based on DBS samples
- Testing subscription to stimulate frequent testing



Acknowledgements

Hepatitis C Internet Project:

Hans Frantzen, Natacha Gelissen, Dorothé Baayen, prof. Gerjo Kok

The hepatitis C internet project was funded by



Roche Netherlands provided an unrestricted grant for broadcasting of the television commercial

Schering-Plough provided an unrestricted grant for the translation of www.heptest.nl

Public Health Service of Amsterdam

Maria Prins





Evaluation of the HCV risk assessment questionnaire

- Population: 171 liver patients (91/171, 53%, HCV positive)
- Paper version of the risk test, and questions about HCV status and perceived HCV risk
- ≥ 1 reported risk leads to testing advice

	HCV +	HCV -	Total
Test advice	77 (84.6%)	29 (36.3%)	106
No test Advice	14 (15.4%)	51 (63.8%)	65
Total	91	80	171

sensitivity: 84.6%

specificity: 63.8%

✖ ✖ ✖ Example

Fictitious population of 100,000 individuals, HCV prevalence 2%:

	HCV positive	HCV negative	Total
Test advice	1.692 (84.6%)	35.574 (36.3%)	37.266
No test advice	308 (15.4%)	62.524 (63.8%)	62.832
Total	2.000	98.000	100.000



Risk-based HCV screening

Zuure et al. *BMC Public Health* 2014, **14**:66
<http://www.biomedcentral.com/1471-2458/14/66>



RESEARCH ARTICLE

Open Access

Outcomes of hepatitis C screening programs targeted at risk groups hidden in the general population: a systematic review

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Charlotte HSB van den Berg^{1,2}, Udi Davidovich¹ and Maria Prins^{1,2}

In general, higher HCV prevalence was found in studies:

- In intermediate to high HCV prevalence countries
- In psychiatric clinics
- In programs using pre-screening criteria based on HCV risk factors