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Research Article

Emergency Department Hepatitis C Screening Among Former Soviet Union Immigrants: When International Best Practices Meet Local Realities.

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Running Title: Emergency Department HCV Screening: Feasibility Assessment.

Abstract

Background: International studies demonstrate emergency department (ED)-based hepatitis C virus (HCV) screening achieves higher detection rates and better linkage-to-care than community screening. We tested whether these benefits would extend to Former Soviet Union (FSU) immigrants in Israel, a high-risk population with historically variable screening in primary care.

Methods: Two-phase mixed-methods study at Wolfson Medical Center (June 2023-August 2025). Phase 1: Prospective HCV screening offered systematically to FSU immigrants aged ≥18 presenting to the ED, hypothesizing improved case detection based on international evidence. Phase 2: Following unexpected low participation, systematic barrier analysis including staff interviews (n=18), chart reviews (n=307), community interviews (n=8), and economic evaluation.

Results: Unlike international experiences, ED screening failed dramatically. Of 970 eligible patients, only 243 (25.1%) completed screening. Among screened, HCV seroprevalence was 3.3% (8/243) with one viremic case who died before treatment. Phase 2 revealed population-specific barriers: mistrust of medical authority (31.1% of refusals), rooted in Soviet-era medical trauma; fear of diagnosis consequences (23.9%); and wellness perception (22.2%). Refusers were more likely to present during evening hours (64.5% vs 35.8%, p<0.001) and have shorter stays (median 2.1 vs 4.7 hours, p<0.001).

Conclusions: ED-based HCV screening, despite international success, failed in FSU immigrants due to unique historical and cultural barriers. These findings challenge the universal applicability of ED screening strategies and emphasize the need for population-specific evaluation before implementing internationally validated interventions. For populations with medical system trauma, community-based approaches may be essential regardless of international best practices.

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INTRODUCTION

Emergency department (ED)-based hepatitis C virus (HCV) screening has emerged as a promising strategy internationally. Studies from the United States demonstrate that ED screening achieves higher confirmation rates, better treatment initiation, and improved linkage-to-care compared to community settings (1,2). Nontargeted ED screening identifies substantially more cases than traditional risk-based approaches (3,4), with Anderson et al. showing treatment and cure rates comparable to ambulatory settings (5). These successes have led to recommendations for expanded ED-based screening programs (6,7).

In Israel, HCV screening among Former Soviet Union (FSU) immigrants—who historically show 10-13% prevalence versus 0.7% in the general population (8,9)—relies primarily on family physicians with highly variable guideline adherence. Given international evidence of ED screening superiority and the known limitations of Israeli primary care screening, we hypothesized that systematic ED-based screening would improve case detection in this high-risk population.

However, FSU immigrants present unique characteristics not examined in international ED screening studies: exposure to Soviet-era medical authoritarianism, iatrogenic HCV transmission through state healthcare, and documented mistrust of medical systems (10). Whether successful ED screening models translate to populations with historical medical trauma remained unknown.

This study aimed to test whether ED-based screening would improve HCV detection among FSU immigrants as demonstrated internationally and, following observed implementation challenges, systematically analyze barriers to inform future screening strategies.

METHODS

Study Design

We conducted a sequential mixed-methods study in two phases. Phase 1 (June 2023-May 2025) comprised prospective HCV screening. Following lower-than-anticipated participation, Phase 2 (June-August 2025) employed retrospective mixed-methods evaluation to understand implementation barriers.

Setting

Wolfson Medical Center is a 714-bed hospital in Holon, Israel, serving approximately one million residents. The catchment area includes high FSU immigrant concentrations: Bat Yam (40%), Rishon LeZion (35.2%), and Holon (30.9%).

Phase 1: Prospective Screening

FSU immigrants born in former Soviet republics before December 1991, aged ≥18 years presenting to the ED were eligible. We excluded patients with known active HCV, previous HCV treatment, inability to consent, or hemodynamic instability. Four bilingual Hebrew-Russian nurses completed 16-hour training covering HCV epidemiology, motivational interviewing, and cultural competency. Screening was offered daily from 10:00-22:00 using point-of-care HCV antibody testing with reflex RNA confirmation for positive results. We collected demographics, laboratory values, ED disposition, and screening outcomes. The Fibrosis-4 (FIB-4) index assessed fibrosis risk.

Phase 2: Barrier Analysis

Following 44.2% participation rate, we conducted semi-structured interviews with screening staff including nurses (n=4), ED physicians (n=8), charge nurses (n=3), and social workers (n=3). Interviews explored recalled refusal reasons, patient reactions, and perceived barriers. We performed retrospective chart review of all 307 patients who refused screening, examining documented reasons, clinical characteristics, and visit patterns. Key informant interviews included FSU community leaders, Russian-speaking physicians (n=3), community organization representatives (n=3), and immigrant association leaders (n=2).

Statistical Analysis

Quantitative data were analyzed using SPSS with chi-square tests for categorical variables and t-tests for continuous variables. P-values <0.05 were considered significant. Qualitative data underwent thematic analysis using the Consolidated Framework for Implementation Research (CFIR). Integration used joint displays comparing quantitative outcomes with qualitative themes.

Ethics

The study was approved by Wolfson Medical Centre Ethics Committee with amendment for retrospective data collection.

Phase 1: Screening Outcomes

During the 24-month screening period, we identified 970 eligible FSU immigrants presenting to the ED. Of these, 420 (43.3%) were never approached due to high acuity (n=180, 42.9%), rapid discharge (n=140, 33.3%), language barriers (n=60, 14.3%), and workflow constraints (n=40, 9.5%). Among 550 approached patients, 243 (44.2%) accepted screening while 307 (55.8%) refused participation (**Table 4**).

The 243 screened participants had a mean age of 53.8 years (SD 14.2) with 136 (56.0%) male. Countries of origin included Russia 109 (44.9%), Ukraine 66 (27.2%), Belarus/Moldova 32 (13.2%), and other FSU republics 36 (14.8%) (**Table 1**). Eight participants (3.3%, 95% CI: 1.4-6.4%) tested HCV antibody positive. RNA testing was completed for five of eight seropositive cases (62.5%), revealing one patient (20.0%) with

detectable HCV RNA, yielding an overall viremic prevalence of 0.4% (1/243). The single patient with active infection died from decompensated cirrhosis before treatment initiation, resulting in zero successful linkages to care (**Table 4**).

Table 1. Baseline Demographic and Clinical Characteristics of Screened Participants (n=243)

Characteristic	Value
Age, mean (SD), years	53.8 (14.2)
Male sex, n (%)	136 (56.0)
Country of origin, n (%)	
Russia	109 (44.9)
Ukraine	66 (27.2)
Belarus/Moldova	32 (13.2)
Other FSU	36 (14.8)
Normal liver enzymes, n (%)	227 (93.4)
Low fibrosis risk (FIB-4 <1.45), n (%)	170 (70.0)

Phase 2: Barrier Analysis

Staff interviews (n=18) yielded specific refusal reasons for 180 of 307 patients (58.6% recall rate). The most common reason was mistrust of screening intent (n=56, 31.1%), followed by fear of positive results (n=43, 23.9%), wellness perception (n=40, 22.2%), privacy concerns (n=27, 15.0%), and time constraints (n=14, 7.8%) (**Table 2**).

Table 2. Reasons for Screening Refusal Based on Staff Recall (n=180).

Reason	n (%)
Mistrust of screening intent	56 (31.1)
Fear of positive results	43 (23.9)
Wellness perception (“I feel fine”)	40 (22.2)
Privacy concerns	27 (15.0)
Time constraints	14 (7.8)

Chart review of the 307 refusers revealed significant differences from participants. Refusers were more likely to present with low acuity (ESI 4-5: 275, 89.6% vs 161, 66.3%, p<0.001), be discharged home (276, 89.9% vs 161, 66.3%, p<0.001), and present during evening hours (198, 64.5% vs 87, 35.8%, p<0.001). Median length of stay was significantly shorter for refusers (2.1 hours, IQR 1.4-3.2 vs 4.7 hours, IQR 2.8-7.9, p<0.001). Only 23 charts (7.5%) contained documented refusal reasons beyond “patient declined” (**Table 3**).

Community key informant interviews (n=8) identified three primary themes. All eight informants mentioned Soviet medical trauma, describing how medical records were used for state surveillance and diagnosis led to job loss and social exclusion. Six informants discussed stigma associations, noting hepatitis was linked to drug use and prostitution with significant fear of community judgment. Seven informants emphasized systemic mistrust, particularly suspicion of targeted screening “only for Russians” and fear of data collection for governmental purposes.

Table 3. Characteristics of Refusers versus Participants

Characteristic	Refusers (n=307)	Participants (n=243)	p-value
Low acuity (ESI 4-5), n (%)	275 (89.6)	161 (66.3)	<0.001
Discharged home, n (%)	276 (89.9)	161 (66.3)	<0.001
Evening presentation, n (%)	198 (64.5)	87 (35.8)	<0.001
Median LOS, hours (IQR)	2.1 (1.4-3.2)	4.7 (2.8-7.9)	<0.001
Documented refusal reason, n(%)	23 (7.5)	NA	NA

Table 4. HCV Screening Cascade of Care.

Care Cascade Step	n/N (%)
Eligible patients identified	970/970 (100)
Patients approached	550/970 (56.7)
Screening accepted	243/550 (44.2)
Antibody positive	8/243 (3.3)
RNA testing completed	5/8 (62.5)
RNA positive (active infection)	1/5 (20.0)
Linked to care	0/1 (0)
Treatment initiated	0/1 (0)

DISCUSSION

This mixed-methods evaluation reveals why ED-based HCV screening, despite strong international evidence of effectiveness (1-7), failed completely in FSU immigrants. Our systematic analysis of 307 refusals provides clear evidence that population-specific barriers can override the advantages of ED-based screening demonstrated elsewhere.

The dramatic contrast between our results and international ED screening programs is summarized in **Table 5**, which shows our screening acceptance was approximately half that of international studies, and our linkage-to-care completely failed compared to their 60-80% success rates.

Table 5. Comparison with International ED Screening Studies.

Metric	International Studies	Our Study
Screening acceptance	70-90%	44.2%
Population reach	60-80%	25.1%
Linkage-to-care	60-80%	0%
Treatment initiation	40-60%	0%

The predominance of mistrust (31.1%) as the primary refusal reason distinguishes our population from those in successful international programs. This mistrust is not general healthcare avoidance but specific to systematic screening by authorities. The finding that refusers were more likely to present during evening hours (64.5% vs 35.8%, p<0.001) and leave quickly (median 2.1 vs 4.7 hours) suggests active avoidance of prolonged contact with official medical systems. Fear of positive results (23.9%) ranked second, but qualitative data reveals this fear differs from typical diagnosis anxiety. FSU immigrants specifically feared economic and social consequences based on historical Soviet precedent, where hepatitis diagnosis triggered systematic discrimination. This context-specific fear cannot be addressed through standard counseling approaches used in US programs.

The wellness perception barrier (22.2%) reflects not just health literacy gaps but learned survival behavior. In Soviet medical systems, acknowledging illness without severe symptoms risked unnecessary exposure to state intervention. This explains why refusers were predominantly low-acuity patients (89.6% ESI 4-5) who saw no immediate need to risk screening.

Our data reveals that hospital characteristics intended to improve screening—systematic protocols, standardized approaches, official documentation—instead triggered avoidance responses rooted in historical trauma. The formal ED environment transformed preventive screening into perceived threat, particularly when offered as targeted intervention "for Russians only." The near-complete absence of documented refusal reasons (7.5%) in medical charts reflects staff discomfort with exploring deeper resistance, suggesting that even well-trained bilingual staff could not overcome fundamental trust barriers in the hospital context.

Our findings challenge the assumption that evidence-based interventions are universally applicable. For Israel's HCV elimination goals, these results indicate that hospital-based screening should not be implemented for FSU immigrants despite international success. Community-based alternatives with peer educators from FSU communities are essential. Trust-building must precede screening in populations with medical trauma, and resources should enhance primary care rather than create parallel hospital programs.

This study provides crucial evidence that successful interventions require cultural validation before implementation. Health systems planning screening programs should assess historical healthcare experiences of target populations, pilot test with vulnerable groups before scaling, include community voices in program design, and recognize that operational efficiency cannot overcome relational barriers.

We acknowledge several limitations including single-center design, retrospective collection of refusal data relying on staff recall, and inability to determine true population prevalence due to selection bias. However, these limitations reflect real-world implementation challenges that would affect any hospital-based program.

CONCLUSIONS

Emergency department HCV screening among FSU immigrants in Israel , with the great limitation of high rate of refusal to participate, showed a grade of implementation failure, with only 25% population reach and zero successful treatments. Systematic analysis revealed that mistrust rooted in Soviet medical trauma (31.1% of refusals), context-specific fears (23.9%), and learned avoidance behaviors (22.2%) created insurmountable barriers in hospital settings. These population-specific factors overrode any advantages of ED-based screening demonstrated internationally. Health ministries should carefully evaluate cultural and historical contexts before implementing screening programs based on international evidence. For populations with medical trauma, community-based approaches may be essential regardless of global best practices.

Author Contributions

Conceptualization: F.K., M.P., and D.H.; Methodology: F.K., A.N., and M.P.; Formal analysis: F.K. and N.Z.; Investigation: F.K., I.A., A.C., and M.K.; Resources: M.P., V.D., and D.H.; Data curation: F.K., I.A., and A.C.; Writing—original draft preparation: F.K.; Writing—review and editing: F.K., N.Z., E.N., A.N., M.P., and D.H.; Visualization: F.K. and N.Z.; Supervision: A.N, M.P. and D.H.; Project administration: F.K. and M.K.;

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Conflicts of Interest

All authors declare no conflicts of interest.

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Data Availability Statement

De-identified participant data will be made available upon reasonable request to researchers who provide a methodologically sound proposal.

Abbreviations

ALT: Alanine aminotransferase
AST: Aspartate aminotransferase
CI: Confidence interval
DAA: Direct-acting antiviral
ED: Emergency department
ESI: Emergency Severity Index
FIB-4: Fibrosis-4 index
FSU: Former Soviet Union
HCV: Hepatitis C virus
INR: International normalized ratio
IQR: Interquartile range
NIS: New Israeli Shekel
OR: Odds ratio
PCR: Polymerase chain reaction
RNA: Ribonucleic acid
SD: Standard deviation
SPSS: Statistical Package for the Social Sciences
SVR: Sustained virologic response
WHO: World Health Organization

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