



Trends in Anti-HCV Test Requests and Positivity at a Tertiary Care Hospital in Türkiye (2013-2023)

Türkiye’de Üçüncü Basamak Bir Hastanede Anti-HCV Test İstemleri ve Pozitiflik Oranlarındaki Eğilimler (2013-2023)

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ABSTRACT

Objectives: Hepatitis C virus (HCV) infection remains a major public health issue despite the availability of direct-acting antivirals (DAAs). Long-term laboratory data may help evaluate testing patterns and regional epidemiological trends.

Materials and Methods: This retrospective study evaluated anti-HCV tests performed at a tertiary care hospital in Türkiye between 2013 and 2023. Duplicate patient records were excluded, and analyses were conducted on unique individuals tested during the study period. Data obtained from the hospital information system were analyzed by year and by clinical department, focusing on annual test volumes, anti-HCV positivity rates, and departmental distributions.

Results: During the study period, annual anti-HCV test volumes ranged from 7,405 to 52,060, and the mean age of tested individuals varied between 42.8 and 48.9 years. Test requests increased until 2019, declined during the coronavirus disease-2019 pandemic, and rose again thereafter. Internal medicine departments accounted for the majority of test requests, while infectious diseases departments contributed the fewest requests but demonstrated the highest positivity rates. Anti-HCV positivity rates ranged from 0.46% to 1.59% during the study period; they increased until 2018, declined sharply in 2019, and subsequently fluctuated during the pandemic period. Despite declining percentages after 2020, the absolute number of anti-HCV-positive individuals increased due to the rising number of tests.

Conclusion: This long-term analysis demonstrates increasing anti-HCV testing activity alongside declining positivity rates. The findings emphasize the importance of sustained surveillance and evaluation of testing practices across clinical departments.

Keywords: Direct-acting antiviral agents, epidemiology, hepatitis C antibodies, hepatitis C virus

ÖZ

Amaç: Hepatit C virüsü (HCV) enfeksiyonu, doğrudan etkili antivirallerin (DAA) mevcut olmasına rağmen önemli bir halk sağlığı sorunu olmaya devam etmektedir. Uzun dönemli laboratuvar verileri, test istem alışkanlıklarını ve bölgesel epidemiyolojik eğilimleri değerlendirmeye yardımcı olabilir.

Gereç ve Yöntemler: Bu retrospektif çalışmada, 2013-2023 yılları arasında Türkiye’de üçüncü basamak bir hastanede gerçekleştirilen anti-HCV testleri değerlendirildi. Yinelenen hasta kayıtları çıkarıldı ve analizler çalışma döneminde test edilen benzersiz bireyler üzerinden gerçekleştirildi. Hastane bilgi yönetim sisteminden elde edilen veriler yıl ve klinik birimlere göre analiz edilerek yıllık test sayıları, anti-HCV pozitiflik oranları ve klinik birimlere göre dağılımlar incelendi.

Bulgular: Çalışma döneminde yıllık anti-HCV test sayıları 7.405 ile 52.060 arasında değişmiş olup, test edilen bireylerin ortalama yaşı 42,8 ile 48,9 yıl arasında değişmiştir. Test istemleri 2019 yılına kadar artmış, koronavirüs hastalığı-2019 pandemisi sırasında azalmış ve sonrasında yeniden artış göstermiştir. İç hastalıkları birimleri en fazla test istemini oluştururken, enfeksiyon hastalıkları birimleri en az test istemine sahip olmasına rağmen en yüksek pozitiflik oranlarını göstermiştir. Anti-HCV pozitifliği 2018 yılına kadar artmış ve 2019 yılında belirgin şekilde düşmüştür (%0,46). Pandemi döneminde pozitiflik oranlarında dalgalanmalar gözlenmiştir. 2020 sonrası yüzdesel pozitiflik oranları azalmış olmasına rağmen artan test sayıları nedeniyle anti-HCV pozitif birey sayısı artmıştır.

Sonuç: Bu uzun dönemli analiz, zaman içinde anti-HCV test istemlerinde artış ve pozitiflik oranlarında azalma olduğunu göstermektedir. Bulgular, klinik birimler arasında test istem uygulamalarının değerlendirilmesi ve HCV süreyansının sürdürülmesinin önemini vurgulamaktadır.

Anahtar Kelimeler: Doğrudan etkili antiviral ajanlar, epidemiyoloji, hepatit C antikoru, hepatit C virüsü

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Introduction

Hepatitis C virus (HCV) infection remains a major global public health concern despite the availability of highly effective direct-acting antivirals (DAAs). The coronavirus disease-2019 (COVID-19) pandemic disrupted screening and treatment services in many countries, thereby delaying progress toward the elimination targets set by the World Health Organization (WHO) (1). A multicenter study conducted in Türkiye reported high sustained virological response (SVR) rates with glecaprevir/pibrentasvir therapy. However, during the pandemic period, substantial interruptions in patient follow-up were observed and access to treatment was restricted (2). Similarly, international reports confirmed that surveillance programs for HCV and other viral infections were weakened during successive waves of the pandemic (3,4).

The TURHEP field study reported an anti-HCV prevalence of 0.3-1.0% in Türkiye. Based on these results, it is estimated that approximately 275,000-494,000 individuals are living with HCV infection nationwide (5). Genotype distribution studies conducted in Istanbul demonstrated the predominance of genotype 1, while genotypes 3, 2, and 4 were identified at lower frequencies (6). More recently, modeling studies have shown that HCV imposes not only a clinical but also a considerable economic burden. A Turkish cost-effectiveness analysis suggested that targeted screening strategies may be more advantageous than current practices and could substantially reduce HCV-related mortality (7).

Despite these national findings, long-term regional data are still limited. Evaluating laboratory-based testing trends may provide valuable insight into local screening practices and surveillance patterns. This study aimed to evaluate long-term trends in anti-HCV test requests and seropositivity across clinical departments in a tertiary care hospital in Türkiye over an eleven-year period.

Materials and Methods

Study Design

This retrospective single-center study was conducted at Muğla Training and Research Hospital in Türkiye from January 2013 to December 2023. All individuals tested for anti-HCV were included, and anti-HCV-positive individuals were examined for prevalence assessments. The department of obstetrics and gynecology was evaluated as a separate category because this department routinely performs antenatal anti-HCV screening, which may influence testing patterns. Anti-HCV testing was performed using Roche Diagnostics' electrochemiluminescence immunoassay kits, according to the manufacturer's instructions.

Data Collection

Data were extracted from the hospital information system and categorized by year and by clinical department (internal medicine, surgery, infectious diseases, and obstetrics/gynecology). The main variables were annual test volumes, anti-HCV positivity rates, and departmental distributions.

Ethics Approval

The study was approved by the Muğla Sıtkı Koçman University Ethics Committee for Medical Sciences (approval no: 91, date: 30.07.2024). Due to the retrospective nature of the study and the use of existing laboratory records, the requirement for individual informed consent was waived by the ethics committee.

Statistical Analysis

Data were analyzed using SPSS version 25 (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to summarize categorical variables. Trends in test requests and seropositivity were assessed using Spearman's rank correlation and linear regression analysis. Statistical significance was set at $p < 0.05$.

Results

A total of 281,715 anti-HCV test requests were evaluated between 2013 and 2023, after exclusion of duplicate patient records. During the study period, annual anti-HCV positivity rates ranged from 0.46% to 1.59%. Between 2013 and 2023, the mean age of individuals undergoing anti-HCV testing showed modest variation, ranging from 42.8 years in 2014 to 48.9 years in 2017. After this peak, values generally fluctuated between 45.5 and 47.1 years without a clear trend. Statistical analyses confirmed no significant association between year and mean age (Spearman $p = 0.46$, $p = 0.151$; linear regression $R^2 = 0.27$, $p = 0.104$), indicating overall stability (Figure 1).

During the same period, the total number of anti-HCV test requests showed a marked upward trend despite fluctuations. Annual requests increased from 7,922 in 2013 to 52,060 in 2023. A steady rise continued until 2017 (24,514 tests), followed by a slight decline in 2018 (23,633 tests) and a sharp increase in 2019 (30,012 tests). In 2020, test numbers dropped to 18,281, likely due to service disruptions during the COVID-19 pandemic, but rose again thereafter, peaking in 2023. Statistical analysis confirmed a strong and significant correlation between year and the number of test requests (Spearman's $p = 0.87$, $p < 0.001$; linear regression $R^2 = 0.69$, $p = 0.002$), consistent with a long-term upward trend. The percentage of anti-HCV-positive individuals declined. The highest

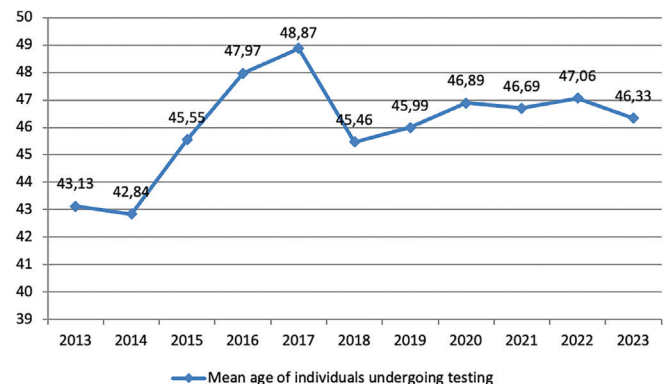


Figure 1. Mean age of individuals tested for anti-HCV (2013-2023)
HCV: Hepatitis C virus

rate was observed in 2013 (1.59%), with values around 1.0% until 2018. A sharp decline occurred in 2019 (0.46%), coinciding with the introduction of DAA reimbursement policies. During the pandemic years, rates slightly increased but remained below 1.0%, with 0.97% in 2021 and 0.76% in 2022, before decreasing to 0.66% in 2023. Statistical analyses confirmed a significant negative association between year and positivity rates (Spearman $p=-0.84$, $p=0.001$; linear regression $R^2=0.56$, $p=0.008$), supporting a consistent downward trend (Figure 2).

Throughout the study period, internal medicine departments consistently accounted for the largest proportion of anti-HCV test requests. In 2013, internal medicine departments represented approximately 53.1% of all anti-HCV test requests, while surgical departments, obstetrics/gynecology, and infectious diseases departments accounted for 26.8%, 9.0%, and 4.4% of requests, respectively. During the COVID-19 pandemic in 2020, the proportional contribution of internal medicine departments decreased to 34.0%, whereas surgical departments and obstetrics/gynecology accounted for 29.8% and 14.7% of requests, respectively. By 2023, internal medicine departments still represented the largest proportion of requests (29.0%), followed by surgical departments (25.5%), obstetrics/gynecology departments (9.6%), and infectious diseases departments (3.4%). These findings indicate that although the absolute number of anti-HCV test requests increased over time, the relative distribution of testing activity across clinical departments also changed during the study period. Internal medicine departments (excluding infectious diseases) accounted for the majority of anti-HCV test requests, which ranged from 2,880 in 2014 to 15,099 in 2023 and showed a significant upward trend (Spearman $p=0.77$, $p=0.005$; linear regression $R^2=0.61$, $p=0.004$). Requests from infectious diseases were considerably lower, ranging from 214 in 2020 to 1,753 in 2023. Although an increase was observed in recent years, no significant linear trend was detected (Spearman $p=0.35$, $p=0.298$; linear regression $R^2=0.23$, $p=0.133$). Other surgical departments also showed increasing demand, from 2,126 in 2013 to 13,252 in 2023, with a significant positive correlation (Spearman $p=0.63$, $p=0.039$; linear regression $R^2=0.56$, $p=0.008$). Similarly, requests

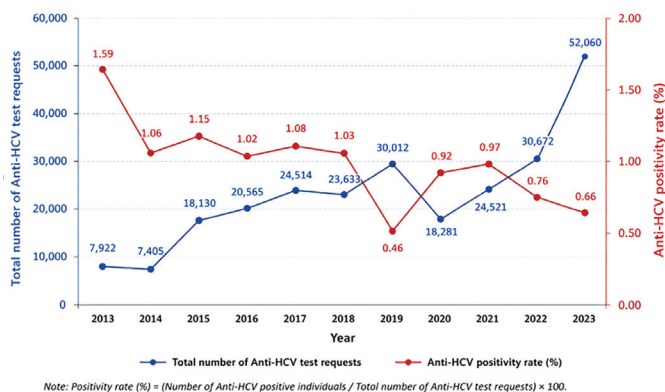


Figure 2. Annual total number of anti-HCV test requests and anti-HCV positivity rates at Muğla Training and Research Hospital, 2013-2023

HCV: Hepatitis C virus

from obstetrics/gynecology increased from 712 in 2013 to 4,996 in 2023, despite a temporary decline during the pandemic (2,683 tests in 2020). The overall upward trend was statistically significant (Spearman's $p=0.74$, $p=0.010$; linear regression $R^2=0.56$, $p=0.008$) (Figure 3).

In internal medicine (excluding infectious diseases), the prevalence ranged from 0.55% in 2019 to 1.71% in 2021, without a consistent trend. Statistical analysis confirmed no significant association between year and prevalence (Spearman $p=-0.25$, $p=0.467$; linear regression $R^2=0.09$, $p=0.380$). By contrast, the infectious diseases department showed notable fluctuations, with a peak in 2018 (5.9%) and elevated levels during the pandemic (3.4% in both 2021 and 2022). A positive correlation was found (Spearman $p=0.71$, $p=0.015$), though linear regression only showed borderline significance ($R^2=0.34$, $p=0.058$). The positivity rate in other surgical departments remained between 0.32% and 0.75%, with no significant trend (Spearman $p=-0.39$, $p=0.232$; linear regression $R^2=0.20$, $p=0.167$). In obstetrics and gynecology, positivity was very low (<0.1%) until 2020, but increased transiently during the pandemic, reaching 0.40% in 2021 and 0.44% in 2022. Statistical analyses suggested a borderline-significant increase (Spearman $p=0.52$, $p=0.100$; linear regression $R^2=0.40$, $p=0.037$) (Figure 4).

Discussion

Between 2013 and 2023, anti-HCV testing at Muğla Training and Research Hospital showed a marked increase, which was interrupted only by a temporary decline in 2020, during the COVID-19 pandemic. This pattern is consistent with international reports documenting disruptions in routine viral hepatitis services due to resource reallocation and restricted healthcare access during the pandemic (4,8). Following this interruption, testing activity gradually recovered, reaching the highest annual number of requests in 2023. At the

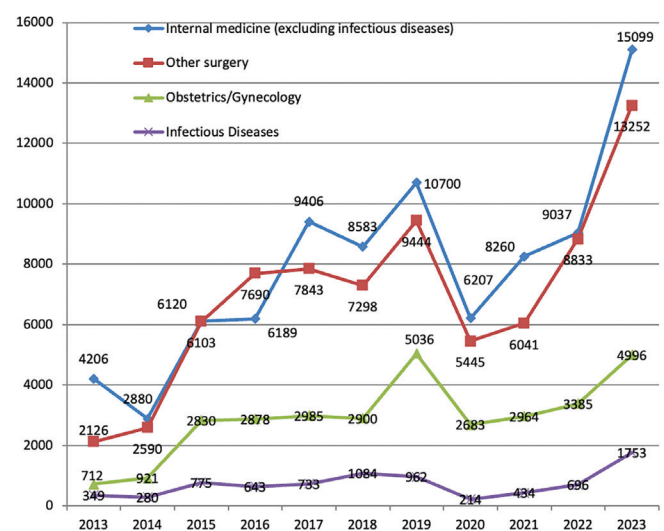


Figure 3. Annual anti-HCV test requests by department at Muğla Training and Research Hospital, 2013-2023

HCV: Hepatitis C virus

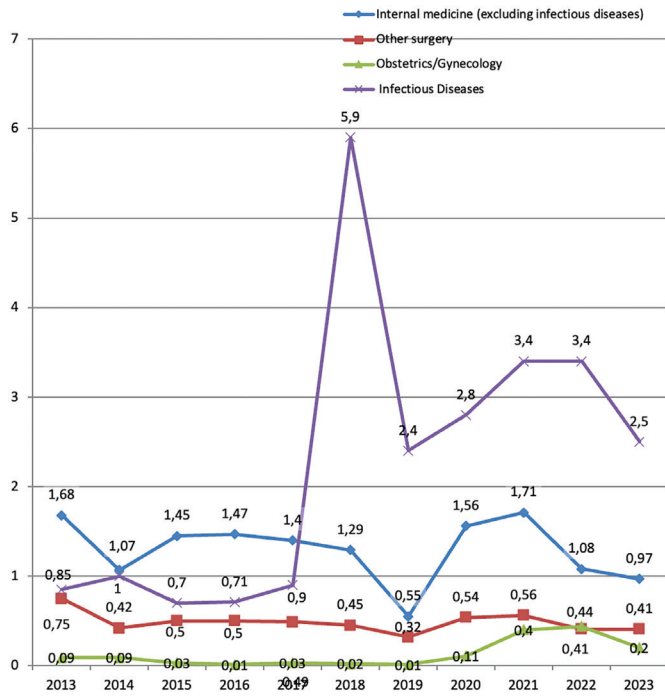


Figure 4. Annual anti-HCV positivity rates (%) by department at Muğla Training and Research Hospital, 2013-2023

HCV: Hepatitis C virus

European level, surveillance data similarly demonstrated ongoing HCV-related healthcare burden, with 28,622 HCV notifications reported in 2023 across European Union/European Economic Area countries (9). In parallel with these surveillance data, the increasing number of anti-HCV test requests observed in our study may reflect sustained awareness, expansion of routine screening practices, increased patient admissions, broader preoperative and antenatal testing strategies, and ongoing demand for HCV testing in clinical practice.

Our data showed that anti-HCV positivity declined steadily over the study period, from 1.59% in 2013 to 0.66% in 2023, with the lowest rate observed in 2023. However, this decline should not be directly attributed to DAA reimbursement or to antiviral treatment because anti-HCV antibodies may persist even after successful treatment (10). Therefore, changes in anti-HCV seropositivity should be interpreted with caution. The observed decrease may instead reflect alternative factors, such as changes in testing practices, expansion of screening to lower-risk populations, increased test volume, or annual variations in the tested population. Although high SVR rates have been reported with DAA regimens, including G/P therapy, the primary therapeutic goal of antiviral treatment is to achieve SVR, defined as HCV-RNA negativity (11). Since anti-HCV antibodies may persist for many years or even lifelong despite successful antiviral therapy, changes in anti-HCV seropositivity rates cannot be directly attributed to DAA treatment effects (2,10).

At the global level, WHO estimates that only 36% of people living with HCV have been diagnosed and 20% treated as of 2022 (12). This indicates that a substantial proportion of infections remain

undiagnosed worldwide. Even when positivity rates decrease, the absolute number of individuals living with HCV may remain considerable, highlighting the importance of continued screening and surveillance efforts. In this context, sustained laboratory-based surveillance systems remain essential to monitor testing patterns and support early detection and linkage to care.

Internal medicine departments were responsible for the majority of test requests, reflecting their broad patient population and routine laboratory evaluation practices. Although infectious diseases departments contributed fewer test requests, positivity rates were considerably higher in this group, likely reflecting more targeted testing among patients with clinical suspicion or known risk factors. Similar patterns have been reported in European cohorts, where risk-based testing strategies yielded higher positivity compared with generalized screening approaches (13).

Other surgical specialties and obstetrics/gynecology departments also demonstrated increasing testing activity after 2015, with obstetrics/gynecology in particular showing a rebound following the pandemic period. International data highlight the importance of antenatal and preoperative screening in identifying previously undiagnosed HCV infections. A 2023 meta-analysis reported variable but measurable HCV seroprevalence among pregnant women worldwide (14). In our cohort, increasing test requests from obstetrics/gynecology departments were observed over time, although positivity rates remained low in this subgroup.

In non-specialist departments, repeated or precautionary laboratory testing may contribute to higher test volumes without necessarily reflecting a proportional increase in disease burden. This factor should be considered when interpreting departmental differences in testing patterns.

The decline in both test volumes and positivity rates during 2020-2021 likely reflects the well-documented negative impact of the COVID-19 pandemic on viral hepatitis programs worldwide. In a European multicenter study, testing, diagnosis, and linkage-to-care for both hepatitis B virus and HCV declined markedly during the first year of the pandemic (1). Similarly, global reviews reported widespread interruptions in HCV elimination programs during this period (2). Our findings are consistent with these observations and suggest a gradual recovery in testing activity after 2021, as healthcare services resumed routine operations.

The impact of the COVID-19 pandemic on HCV programs was not limited to temporary reductions in testing activity but also affected multiple components of the continuum of care. Previous studies from different regions demonstrated marked declines in HCV screening, treatment initiation, outpatient follow-up, and linkage-to-care during the pandemic period (15,16,17,18). Similar disruptions were also reported in high-risk settings such as prison-based screening programs, where interruptions may have contributed to delayed diagnosis and ongoing transmission (19). In addition, healthcare resource reallocation and restricted access to medical services negatively affected the continuity of viral hepatitis elimination efforts worldwide (20,21). In response to these challenges, alternative care

models including telemonitoring systems and HCV hotlines were implemented in some centers to maintain patient follow-up and support elimination strategies during the pandemic (22,23). These findings suggest that maintaining uninterrupted screening and linkage-to-care programs is essential for achieving the WHO 2030 hepatitis elimination targets, even during large-scale public health emergencies (10).

The combination of increasing test volumes and declining positivity rates may reflect changes in testing practices and expanded screening over time. However, the absolute number of anti-HCV-positive individuals remains notable, highlighting the continued importance of screening and surveillance activities. Current WHO targets aim to diagnose 90% and treat 80% of HCV-infected individuals by 2030 (12). In this context, maintaining effective screening strategies and ensuring access to antiviral therapy remain important components of national hepatitis control efforts.

Study Limitations

This study has several limitations. First, it was conducted at a single center, which may limit the generalizability of the findings. Second, anti-HCV positivity was based on serological results, and confirmatory HCV-RNA data were not available, preventing the assessment of active infection and the distinction between active and resolved HCV infection. Detailed patient-level clinical data, including demographic characteristics, treatment history (including DAA therapy), clinical follow-up information, and data on newly diagnosed cases were not consistently available because of the retrospective, laboratory-based design of the study. In addition, potential confounders, such as comorbidities and individual risk factors, could not be evaluated because of limitations of the dataset. Although duplicate patient records were excluded, variations in testing practices across departments may still have influenced the number of test requests. Despite these limitations, the study provides long-term regional data on anti-HCV testing patterns and seropositivity trends that may contribute to understanding local HCV surveillance dynamics.

Conclusion

This 11-year retrospective analysis demonstrated an overall increase in anti-HCV testing at a tertiary care hospital in Türkiye. Testing volumes declined during the COVID-19 pandemic (2020-2021) but subsequently recovered, reaching their highest level in 2023. Positivity rates showed an overall downward trend during the study period. While infectious diseases departments recorded the highest positivity rates, obstetrics/gynecology and surgical specialties showed increased testing activity, particularly in the post-pandemic period. These findings highlight the value of continuous surveillance of laboratory testing patterns and the importance of maintaining effective screening strategies across clinical departments.

Ethics

Ethics Committee Approval: The study was approved by the Muğla Sıtkı Koçman University Ethics Committee for Medical Sciences (approval no: 91, date: 30.07.2024).

Informed Consent: Due to the retrospective nature of the study and the use of existing laboratory records, the requirement for individual informed consent was waived by the ethics committee.

Footnotes

Authorship Contributions

Concept: V.A., T.T., Design: V.A., Data Collection or Processing: V.A., Analysis or Interpretation: V.A., Literature Search: V.A., T.T., Writing: V.A., T.T.

Conflict of Interest: No conflict of interest was declared by the authors.

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References

- Blach S, Kondili LA, Aghemo A, Cai Z, Dugan E, Estes C, Gamkrelidze I, Ma S, Pawlotsky JM, Razavi-Shearer D, Razavi H, Waked I, Zeuzem S, Craxi A. Impact of COVID-19 on global HCV elimination efforts. *J Hepatol*. 2021;74:31-36.
- Gürbüz Y, Kocagül-Çelikbaş A, Öztoprak N, Aygen B, Batırel A, Habiloğlu AD, Aktuğ-Demir N, Çeken S, Demirtürk N, Ceylan MR, Üçer Ş, Karakeçili F, Alkan S, İnce N, Akça A, Günay V, Mustanoğlu-Özatağ D, Çınar G, Kınıklı S, Yıldız O, Şarlak-Konya P, Sümer Ş, Yekenkurul D, Çelik M, Binay UD, Aşık-Otman Z. The efficacy of glecaprevir/pibrentasvir in chronic hepatitis C patients and the impact of the COVID-19 pandemic: multicenter real-life data. *Infect Dis Clin Microbiol*. 2024;6:216-224.
- Romero-Hernández B, Martínez-García L, Rodríguez-Domínguez M, Martínez-Sanz J, Vélez-Díaz-Pallarés M, Pérez Mies B, Muriel A, Gea F, Pérez-Eliás MJ, Galán JC. The negative impact of COVID-19 in HCV, HIV, and HPV surveillance programs during the different pandemic waves. *Front Public Health*. 2022;10:880435.
- Laury J, Hiebert L, Ward JW. Impact of COVID-19 response on hepatitis prevention care and treatment: results from global survey of providers and program managers. *Clin Liver Dis (Hoboken)*. 2021;17:41-46. Erratum in: *Clin Liver Dis (Hoboken)*. 2021;17:382.
- Tozun N, Özdoğan O, Cakaloglu Y, İdilman R, Karasu Z, Akarca U, Kaymakoglu S, Ergonul O. Seroprevalence of hepatitis B and C virus infections and risk factors in Turkey: a fieldwork TURHEP study. *Clin Microbiol Infect*. 2015;21:1020-1026.
- Karabulut N, Alacam S, Yolcu A, Onel M, Agacfidan A. Distribution of hepatitis C virus genotypes in Istanbul, Turkey. *Indian J Med Microbiol*. 2018;36:192-196.
- Çekin AH, Güner R, Çağkan İnkaya A, Oğuz D, Özdemir O, Tabak ÖF. Modeling the health economic burden of hepatitis C virus infection in Turkey: cost-effectiveness of targeted screening. *Turk J Gastroenterol*. 2023;34:1062-1070.
- Kondili LA, Buti M, Riveiro-Barciela M, Maticic M, Negro F, Berg T, Craxi A. Impact of the COVID-19 pandemic on hepatitis B and C elimination: an EASL survey. *JHEP Rep*. 2022;4:100531.
- European Centre for Disease Prevention and Control. Hepatitis C: annual epidemiological report for 2023 [Internet]. Stockholm: ECDC; 2025 [cited 2026 Feb 15]. Available from: <https://www.ecdc.europa.eu/sites/default/files/documents/AER-Hepatitis-C-2023.pdf>

10. World Health Organization. Hepatitis C: key facts [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Feb 15]. Available from: <https://www.who.int/news-room/fact-sheets/detail/hepatitis-c>
11. Sarıgül Yıldırım F, Üser Ü, Sarı ND, Kurtaran B, Önlü Y, Şenates E, Gündüz A, Zerdali E, Karsen H, Batirel A, Karaali R, Güner R, Yamazhan T, Köse Ş, Erben N, İnce N, Köksal İ, Çuvalcı Öztoprak N, Yörük G, Kömür S, Bal T, Kaya S, Bozkurt İ, Günel Ö, Yıldız İE, İnan D, Barut Ş, Namıdur M, Tosun S, Türker K, Şener A, Hızal K, Baykam N, Duygu F, Bodur H, Can G, Gül HC, Sağmak Tartar A, Çelebi G, Sünnetçioğlu M, Karabay O, Kumbasar Karaosmanoğlu H, Sırmate F, Tabak F. In a real-life setting, direct-acting antivirals to people who inject drugs with chronic hepatitis C in Turkey. *Turk J Gastroenterol*. 2022;33:971-978.
12. D'Ambrosio R, Anolli MP, Pugliese N, Masetti C, Aghemo A, Lampertico P. Prevalence of HCV infection in Europe in the DAA era: review. *Liver Int*. 2024;44:1548-1563.
13. Abbasi F, Almkhatar M, Fazlollahpour-Naghibi A, Alizadeh F, Behzad Moghadam K, Jafari Tadi M, Ghadimi S, Bagheri K, Babaei H, Bijani MH, Rouholamin S, Razavi M, Rezaeinejad M, Chemaitelly H, Sepidarkish M, Farid-Mojtahedi M, Rostami A. Hepatitis C infection seroprevalence in pregnant women worldwide: a systematic review and meta-analysis. *EClinicalMedicine*. 2023;66:102327.
14. Saleh E, Rodriguez M. Adopting the 2023 CDC early testing for perinatal hepatitis C: call to action for pediatric primary care providers. *J Pediatric Infect Dis Soc*. 2024;13(Suppl 5):S153-S158.
15. Li Y, Li X, Lan X, Xue C, Zhang B, Wang Y. Impact of COVID-19 on epidemic trend of hepatitis C in Henan province assessed by interrupted time series analysis. *BMC Infect Dis*. 2023;23:691.
16. Morrow RL, Binka M, Li J, Irvine M, Bartlett SR, Wong S, Jeong D, Makuza JD, Wong J, Yu A, Krajden M, Janjua NZ. Impact of the COVID-19 pandemic on hepatitis C treatment initiation in British Columbia, Canada: an interrupted time series study. *Viruses*. 2024;16:655.
17. Hussain MRA, Ali M, Sugiyama A, Hiebert L, Rahman MA, Azam G, Ouoba S, E B, Ko K, Akita T, Ward JW, Tanaka J. The impact of COVID-19 on hepatitis B and C virus prevention, diagnosis, and treatment in Bangladesh compared with Japan and the global perspective. *BMC Health Serv Res*. 2023;23:1137.
18. Kaufman HW, Bull-Otterson L, Meyer WA 3rd, Huang X, Doshani M, Thompson WW, Osinubi A, Khan MA, Harris AM, Gupta N, Van Handel M, Wester C, Mermin J, Nelson NP. Decreases in hepatitis C testing and treatment during the COVID-19 pandemic. *Am J Prev Med*. 2021;61:369-376.
19. Kronfli N, Leone F, Dussault C, Miliani G, Gallant E, Potter M, Cox J. Impact of the COVID-19 pandemic on hepatitis C virus screening in provincial prisons in Montreal, Quebec, Canada. *Front Public Health*. 2024;12:1380126.
20. Kazmi SK, Khan FMA, Natoli V, Hunain R, Islam Z, Costa ACDS, Ahmad S, Essar MY. Viral hepatitis amidst COVID-19 in Africa: Implications and recommendations. *J Med Virol*. 2022;94:7-10.
21. Cooper MP, Foley H, Damico D, Wright M, Rhudy C, Schadler A, Platt T. Impact of the COVID-19 pandemic on hepatitis C outcomes at a health-system specialty pharmacy. *J Manag Care Spec Pharm*. 2022;28:667-672.
22. Bittencourt PL, Codes L, César AMDG, Mussi FC, Ferraz MLG. Telemonitoring of the continuum of care of hepatitis C during the COVID-19 pandemic in Brazil. *Telemed J E Health*. 2023;29:1673-1678.
23. Hartl L, Jachs M, Bauer D, Simbrunner B, Chromy D, Binter T, Steininger L, Schwarz C, Schwarz M, Burghart L, Strassl R, Trauner M, Gschwandler M, Mandorfer M, Reiberger T. HCV hotline facilitates hepatitis C elimination during the COVID-19 pandemic. *J Viral Hepat*. 2022;29:1062-1072.