

Different Aspects of Viral Hepatitis
Health Care Workers and
Viral Hepatitis in Turkey

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Hepatitis B and Health Care Workers

- ❖ There are approximately 150,000 people working in the health care system in Turkey
 - ❖ Health care workers are not only doctors and nurses
 - Students in medical school, students in school of dentistry, and school of nursing,
 - Lab and radiology technicians... are all classified as health care workers
- ✓ These health care workers are at risk for infection with blood-borne pathogens, including HBV, HCV and HIV.

Occupational Exposure to Blood and Body Fluids- Turkey

- ❖ In Turkey, blood-borne pathogen transmission occurs predominantly by percutaneous or mucosal exposure of workers with the blood or body fluids of the infected patient

| High Risk Group | N | Exposure to Blood | Exposure to Body Fluids | Previous Vaccination |
|------------------------|-----|-------------------|-------------------------|----------------------|
| Medical School Student | 261 | 68.8% | 31.8% | NA |
| Nursing Student | 473 | 74% | NA | 67.7% (+) |
| Nurses | 289 | 76.2% | NA | 32.4% (-) |
| HCW | 988 | 64 % | 64 % | 68% (+) |

Azap et al. Am J Infect 2005;33:48-52
Ayrancı et al. Journal of Hospital Infection (2004) 58, 216-223
Talas et al. Journal of Clinical Nursing, 18, 1394-1403

Occupational Exposure to Blood and Body Fluids- Turkey

❖ 988 HCW

- 500 nurses (51%), 212 residents (21%), 152 nurse assistants (15%), and others (13%)

❖ 64% of the HCWs had been exposed to blood and body fluids at least once in their professional life

❖ **Recapping the needle** was (45%) the most frequent cause of the sharps injuries

❖ Of the injured HCWs,

- **28% were not using any personal protective equipment, and**
- **67% did not seek any medical advice for injury.**

Occupational Exposure to Blood and Body Fluids- Turkey

- ✓ Of the 988 HCWs surveyed,
 - 68% had been previously vaccinated against HBV
- ✓ Of the unvaccinated group,
 - 46% were naturally immunized,
 - 6% were already HBsAg positive

- ❖ The vaccination rate was higher in physicians than in nurses
- ❖ Underlying reason for unvaccinated status:
 - Unable to afford vaccination 20%
 - Personal neglectfulness 14%
 - Anxious about potential adverse events 3%

Predictive Factors for Occupational Bloodborne Exposure in Turkish Hospitals

Multicenter study
n= 5238 HCW

- ❖ 41.3% nurses, 29.0% doctors, 9.3% laboratory workers, and 20.3% paramedics
- ❖ 50.1% of the participants reported at least 1 occupational PME in the previous year

Predictive factors were:

- ✓ Working at a surgical site
- ✓ Being a doctor or a being a nurse
- ✓ Younger age
- ✓ Low socioeconomic status

Occupational Exposure in Health Care Workers - Turkey

- ❖ Exposure with blood and body fluids are frequently seen in Turkey (31%-68%)
- ❖ Especially nurses and doctors are under risk
- ❖ Recapping the needle is the most frequent type of injury (45%-55%)
- ❖ Approximately 1/3 of the cases are not immune to HBV at time of exposure and
- ❖ Most of the cases do not seek for medical help

HBV in Health Care Workers

Prevalence Rate of HBV in Health Care Workers

- ❖ Turkey has been known as a country with intermediate endemicity for hepatitis B
- ❖ The overall prevalence of HBV in Turkey has been reported to be between 4% and 6.8%
- ❖ The prevalence rate is especially high in the Southeastern part of the country (~ 8%)
- ❖ These high rates of HBV prevalence in the country effects the (HCW) and (HCS) as well
- ❖ In Turkey, HCWs and HCSs are classified as high risk groups for HBV and, vaccination of these groups are recommended by the Ministry of Health

Prevalence Rate of HBV in Health Care Workers

- ❖ Starting from 1990's multiple single center studies have been reported from all parts of the country
- ❖ The results vary between different regions (1.3% to 10%)
- ❖ Different prevalence rates have also been reported even from the same region of the country

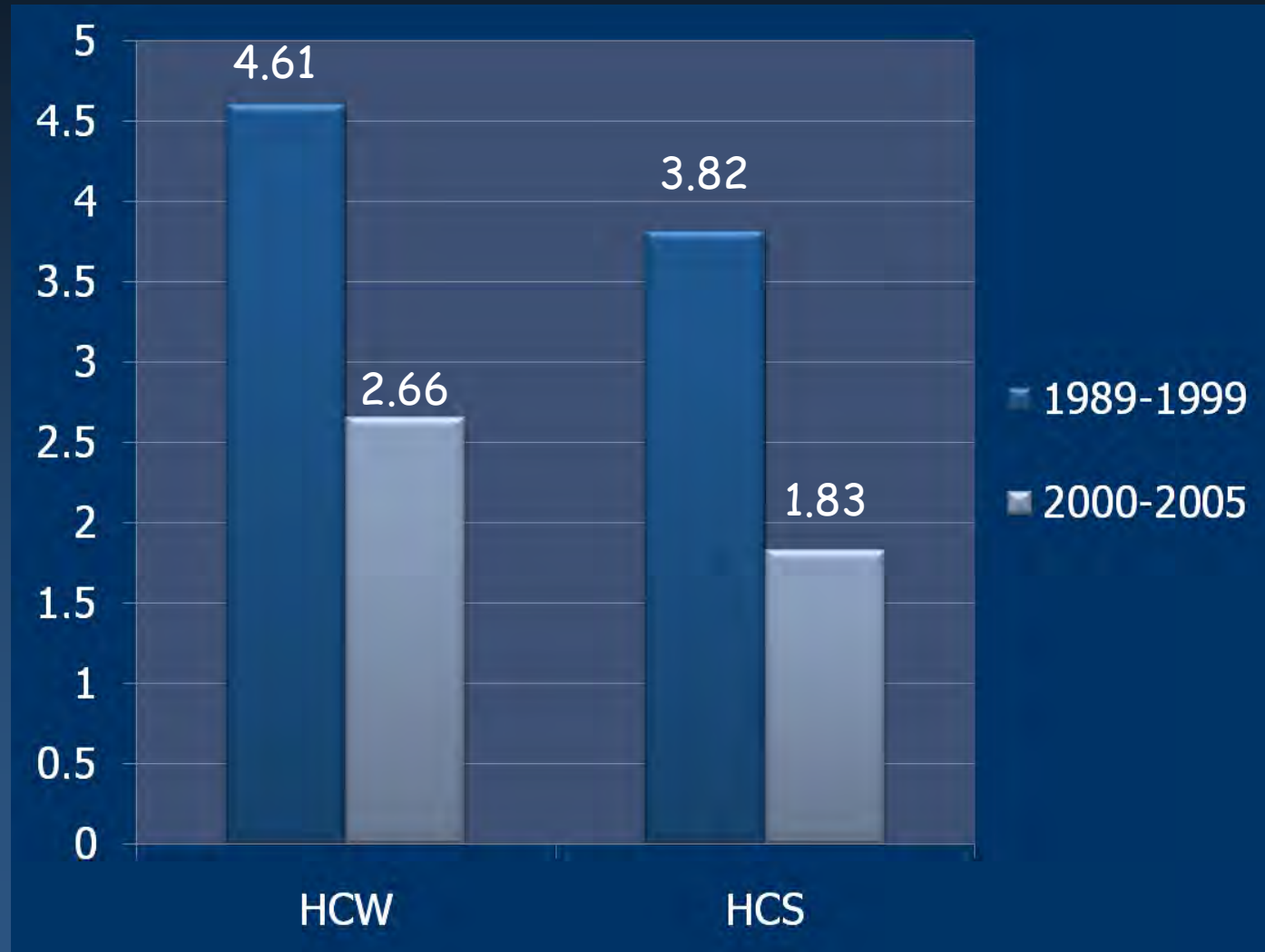
Prevalence Rate of HBV in Health Care Workers

- ✓ When interpreting these results, we should not forget that:
 - ❖ HBV prevalence rates are higher in some parts of the country
 - ❖ Studies are mostly from single center experience, and are designed with small numbers
 - ❖ Cases are usually heterogeneous for age and sex
 - ❖ Patients demographics such as birth place and migration history, and work experience are not analyzed in most of these studies

What is the Prevalence Rate of HBV in Health Care Workers and Health Care Students ?

| Category | Year | No of Std. | N | n | Pooled Value | Mean Value |
|----------|-----------|------------|------|-----|------------------|------------------|
| HCW | 1989-1999 | 15 | 4147 | 191 | 4.61 (3.97-5.24) | 3.38 (2.83-3.93) |
| HCW | 2000-2005 | 14 | 4551 | 121 | 2.66 (2.19-3.13) | 1.87 (1.47-2.26) |
| HCS | 1989-1999 | 4 | 1022 | 39 | 3.82 (2.64-4.99) | 2.94 (1.90-3.94) |
| HCS | 2000-2005 | 3 | 438 | 8 | 1.83 (0.57-3.08) | 2.06 (1.06-3.05) |

The Prevalence Rate of Hepatitis B in HCW Population is Decreasing



More Health Care Workers are Being Vaccinated

| Year | Std. | N | HBsAg (+) (%) | Anti-HBs (%) | Vaccinated (%) |
|-----------|------|--------|--------------------|-------------------|-------------------|
| 1989-1999 | 51 | 14,223 | 4.8 % (1.30-10.0) | 34.4% (13.8-56.0) | 25.4% |
| 2000-2005 | 14 | 5504 | 2.19 % (0.57-3.13) | 12.9% | 39% |

Hepatitis B Virus and HCW in Turkey

- ❖ The prevalence rates of HBV in health care workers is lower compared to healthy population
- ❖ There is a decrease in the prevalence rate of HBV in HCW
- ❖ This is probably due to effective vaccination of these groups at medical school or after starting to work
- ❖ The HCW and HCS's that are vaccinated against HBV has increased from 25% to 39% between 1998 to 2006

HCV in Health Care Workers

Hepatitis C Virus and Health Care Workers in Turkey

| Years | No of Studies | Number | Anti-HCV (+) |
|-----------|---------------|--------|-------------------|
| 1992-1999 | 4 | 3,994 | 0.70 % (0%-2.42%) |
| 2000-2006 | 11 | 3,077 | 0.42 % (0%-2.1%) |

The prevalence of HCV in blood bank donors between
1991 - 1999: 0.58 % (n=342,619)
1989 - 2006: 0.38% (n=6,240,130)

Transmission of HCV to Health Care Workers in Turkey

AJIC clinical case study

Transmission of hepatitis C by blood splash into conjunctiva in a nurse

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The risk of transmission of hepatitis C virus (HCV) infection is an important problem for the health care worker. HCV transmission by blood splashing into eyes is very rare. In a hemodialysis department, a 23-year-old female nurse splashed blood from a patient who was anti-HCV positive into her eyes. She washed her eyes with water immediately and reported to the infection control department. She had never used intravenous drugs nor received transfusions. At the time of exposure, there was no abnormality in her laboratory tests. Her anti-HCV and HCV-RNA tests produced negative results. She was followed up for anti-HCV and alanine aminotransferase activity. After 6 months, she presented with sore throat, nausea, vomiting, fatigue, and weight loss. She had icterus and hepatomegaly. In laboratory tests, alanine aminotransferase level was 554 U/L, aspartate aminotransferase level was 388 U/L, and anti-HCV and HCV-RNA tests produced positive findings. She was treated with interferon alfa-2a for a 1-year period. After treatment, an HCV-RNA test produced negative results and transaminase levels were normal. In conclusion, splashing blood from patients who are HCV positive into the face or eyes is a risk for health care workers. They should be educated to prevent a nosocomial acquisition of bloodborne infection and they should observe protective precautions. (*Am J Infect Control* 2003; 31:502-4)

Approximately 1% to 3% of the world population has chronic hepatitis C virus (HCV) infection and the anti-HCV positive rate in healthy blood donors is 0.5% to 4% worldwide.^{1,2} This percentage is 4-fold of the number of HIV cases. HCV causes 20% of acute hepatitis infections and 70% of chronic hepatitis infections in the world. In Turkey, prevalence of anti-HCV among the healthy population is between 0.5% and 1.5%.³ The average incidence of anti-HCV seroconversion after accidental percutaneous exposure from an HCV-positive source is 1.8% (range: 0%–7%), with 1 study indicating that transmission occurred only from hollow-bore needles compared with other sharps.⁴

The health care worker (HCW) has long been recognized to be at risk for hepatitis C infection through occupational exposure to blood and blood-contaminated objects. There is an important risk for

HCWs when caring for patients who are HCV positive. Hemodialysis departments are important places for nosocomial transmission risks.^{5,6} The prevalence of anti-HCV positivity is high among patients undergoing hemodialysis.⁵⁻⁸ Different studies show that if a HCW has continuous skin contact and needstick accidents, anti-HCV prevalence is higher than that in the healthy population.^{8,9} HCV may spread not only by broken skin, but also by mucous contact such as conjunctiva.¹⁰ There is a special occupational hazard for dentists, surgeons, and other HCWs. To our knowledge, we present the third case in the English-language literature of HCV transmission by eye splash.

CASE REPORT

In the hemodialysis department at Dicle University Hospital, Diyarbakir, Turkey, a 23-year-old female nurse splashed blood from a patient positive for anti-HCV and HCV-RNA into her face and eyes. When she was exposed, she was taking blood from a peripheral vein in a patient with chronic renal disease. She washed her eyes and face with water immediately. She reported the accident to hospital management and the hospital infection control department. She had been completely healthy and had never used intravenous drugs nor received transfusion. She had not had a tattoo, needstick accident, or any other risky contact in the last 6 months. Anti-HCV seropositivity by enzyme-linked immunosorbent assay and HCV-RNA by polymerase chain reaction

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✓ There are several case reports on the transmission of HCV from patient to HCW

Hoşoğlu S et al. Am J Infect Control 2003; 31:502-4

Risk of infection in health care workers (n=320) following occupational exposure was analyzed; and transmission of HCV was reported as 0%

Kuruüzüm Z et al. Am J Infect Control 2008;36:27-31

Hepatitis C Virus and HCW in Turkey

- ❖ There are few case reports on transmission of HCV from patient to a health care worker
- ❖ There is a decrease in the prevalence rate of HCV (0.70% to 0.42%)
- ❖ This is probably due to the increased health awareness, better sanitation and hygiene
- ❖ But the prevalence rate of HCV in HCW's is still higher than the healthy population

Prevalence Rate of Other Viruses in the HCW Population

Hepatitis A

- ❖ Kurt et al.
- n=193 76.3% Anti HAV(+) (1997)

Hepatitis E

- ❖ Hoşoğlu et al.
- n=102 19.6% vs 8.03% Anti HEV(+) (1999)

Hepatitis G

- ❖ Sünbül et al.
- n=120 1.6% vs 3.3% HGV-RNA (1998)

What Can be Done ?

- ❖ All students starting medical school should be screened and be vaccinated for HBV
- ❖ Persons who are planning to start working at a health care facility should be educated, screened, and vaccinated for HBV
- ❖ Nurses working in Turkey are frequently exposed to blood-borne infections
- ❖ Precautions and protection from needle stick and sharps injuries are important in preventing infection of nurses
- ❖ Education on transmission of blood-borne infections, vaccination and post-exposure prophylaxis must be implemented

What Can be Done ?

- ❖ All HCWs should be aware of the importance of
 - Standard precautions, including appropriate use of hand washing, protective barriers, and care in the use and disposal of needles and other sharp instruments
- ❖ Employers should have in place a system that includes written protocols for;
 - Prompt reporting,
 - Evaluation, counseling, treatment, and
 - Follow-up of procedures

What Can be Done ?

- ❖ In some countries HBV-infected HCWs are restricted in performing exposure prone procedures based on either HBeAg status or serum HBV DNA level.

HBV Guidelines

| <u>Exclusion from EPPs if:</u> | <u>HBV-DNA</u> |
|--------------------------------|-----------------|
| UK, Australia | $> 10^3$ cps/mL |
| Europ. consensus group, Ir | $> 10^4$ cps/mL |
| Netherland | $> 10^5$ cps/mL |

Expert Committee decides in:

- USA, Canada, New Zealand, Germany, France

What Can be Done ?

- ❖ There are some countries who have guidelines for the management of health care workers infected with HCV

HCV Guidelines

Exclusion from EPPs if:

UK, Australia, Italy
Germany

HCV-RNA

HCV-RNA (+)
> 10^3 cps/mL or
acute infection

- ❖ Successfully treated health care workers are allowed to return to performing exposure prone procedures

What Can be Done ?

For Turkey

1. All HCWs should be screened for HBV and HCV
2. HBeAg and HBV DNA level should be checked for HBV carriers
3. HCV-RNA levels should be determined in Anti-HCV (+) HCWs
4. Guidelines for the management HBV and HCV infected personnel may be prepared

Restriction from performing exposure prone procedures based on either HBeAg status or serum HBV DNA level ????

Hopefully;

With the help of Universal Vaccination and better control of blood-borne viruses, we will not be talking about viral hepatitis in health care workers in the future

Thank You

