Dear Reader,

The 28th of July was dedicated globally to hepatitis. Based on the WHO mandate, this day every year is marked as the ‘World Hepatitis Day (WHD)’ and activities of various stakeholders are aligned towards creating awareness and call for action for hepatitis. FSRC, as part of our continued endeavor for awareness to hepatitis, conducted a scientific panel discussion and public awareness campaign in Bangalore, India.

This bulletin contains an overview of the scientific and public events, and the survey report. As a next to codex, the bulletin dwells on the mystery that is the genotype of Hepatitis C Virus (HCV).

Continuing the trend of infographic, we have an India specific infographic and an epidemiology report on the country for HCV. Additionally, we have an interesting pipeline report on sofosbuvir.

Finally, updates on the hepatitis space across the globe are highlighted in the news section of the bulletin.

We hope you enjoy reading the bulletin and look forward to your feedback.

Stay healthy,
Arun
About FSRC

Our belief

We believe the complex issues in achieving patients’ access to healthcare in emerging markets have to be simplified and resolved!

How we do it?

We develop an unbiased and comprehensive understanding of local issues through our scientific and analytical framework.

What we do?

We provide customized scientific stakeholder management & analytic-based market access solutions on a global, regional and local level.

Our belief is if we provide the “right information to the right people in the health ecosystem,” then the majority of health access issues could be resolved. Validated, credible scientific evidence and unbiased recommendations (the “right information”) undoubtedly allow stakeholders of health (the “right people”) to formulate robust healthcare plans. This in turn, empowers healthcare personnel in arriving at informed decisions for enhanced healthcare management.

Our vision then is to bring together, on one platform, the various groups of the health ecosystem: clinical leaders, patient organizations, non-government organizations (NGOs), governments and pharmaceutical companies. This will allow them to discuss, debate and jointly develop strategies to overcome the various healthcare access issues of emerging economies. To facilitate this process, we

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have developed a network of various stakeholders across emerging and developed markets.

FSRC is engaged in various projects in Africa, Eastern Europe, CIS (Commonwealth of Independent states), Northern and Sub-Saharan Africa in terms of the socioeconomic burden inflicted by selected diseases. The key goal for all these projects is to bridge the significant gap that exists between what needs to be done and what is actually being done from a health delivery aspect. From this, we collaborate to devise an action plan for local organizations to manage disease more effectively and improve health access for patients.

In Egypt, which has the world’s highest HCV (hepatitis C) prevalence, FSRC recently completed a study to estimate the economic impact of failing to treat hepatitis C at an early stage. This report is currently being disseminated through a variety of formats and communication channels to improve awareness about the HCV, potentially resulting in greater focus and better management of the disease. We are collaborating with multiple stakeholders to ascertain the burden of hepatitis C in the countries of the CIS.

Through our REACH framework, FSRC united the previously disparate English speaking countries of Sub-Saharan Africa under a single umbrella in their fight against HCV. To further the cause, we have partnered with a major African group representing French speaking Africa to expand our reach over the entirety of the continent. We constantly strive towards identifying and recommending the best healthcare practices in those areas where effective and comprehensive healthcare policies are not in place. Through this strategy, we hope to contribute to the larger goal of providing effective health access to everyone.
Hepatitis Bulletin 6

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World Hepatitis Day - Expert Group Meeting

phamax conducts an expert group meeting on WHD to discuss how to tackle viral hepatitis

WHD, backed by the World Health Organization and driven by the World Hepatitis Alliance, is an annual event on the 28th of July that each year works towards international focus on hepatitis.

Despite the disease affecting an estimated 24 million Indians (larger than the population of Australia) and resulting in as many deaths worldwide as AIDS, hepatitis does not receive the public focus it deserves. To combat widespread ignorance of this disease, the focus scientific research center (FSRC) of phamax conducted a scientific panel discussion in Bangalore, India.

Dr S Pruthvish, Professor and Head of Department, Community Medicine, MS Ramaiah Medical College and Hospital; Dr Ramakrishna Goud, Additional Professor, Department of Community Health, St John’s Medical College;
Dr Suresh Babu, Assistant Professor in Medical Oncology; Dr Sangameshwar Mahagaonkar, Global Product Lead – Health and Wellness, Nokia Life; Dr Avinash Balekuduru, Associate Professor, Department of Gastroenterology, MS Ramaiah Hospitals and Dr Anoop Gowda, Assistant Professor and Head of Nephrology, Ambedkar Medical College were on the expert panel.

The recommendations are as below

• Universal immunization against Hepatitis B Virus (HBV)
• Compulsory implementation of Universal Safety Precautions in clinical practice to prevent spread of infections
• Mass movement for voluntary blood donation (serves a dual purpose of screening for hepatitis and increasing availability of blood for emergencies)
• Implementation of an occupational policy with government mandate for the vulnerable sections (professionals in contact with blood and blood products)
• Public awareness (in local language), counselling (pre and post-test) for chronic viral hepatitis and dissemination of awareness material through use of technology (mobiles, social media)
• Advocacy for hepatitis through NGOs
Hepatitis Bulletin 6th Edition

World Hepatitis Day - Awareness Campaign

phamax conducts a hepatitis awareness campaign on WHD

As part of the WHD campaign, **FSRC of phamax** conducted a public awareness campaign for the students of **Jyoti Nivas College, Koramangala, Bangalore**. Speaking at the public event, **Dr Ramakrishna Goud (Additional professor, Department of Community Health, St.John’s Medical College, Bangalore)** stressed upon the need for public awareness about a preventable disease like viral hepatitis. Dr Goud emphasized the safe practices that a person can follow to prevent contracting the various forms of hepatitis. Based on the range of viruses, he outlined preventive measures like hygiene, hand washing, consumption of boiled water for hepatitis types A and E; and safe behaviour, safe sex, sterile needles, screening for blood products before transfusion and proper disposal of medical waste.

It is often said that students make the best teachers, as through teaching one of them, a multitude of people connected to them will be similarly educated. FSRC hopes this and future events will spark concern regarding the disease at all levels and begin the process of creating awareness of hepatitis in India.
HCV in the Indian Context

Global Prevalence of HCV

It has been estimated that the global prevalence of hepatitis C virus (HCV) infection is rising at a rate of 2%, with 150 million people chronically infected worldwide. More than 0.35 million people die every year from hepatitis C related liver diseases.¹

HCV in India

Prevalence

In 2005, around 12.2 million HCV carriers were reported in India.² However, it is currently estimated that around 15 million people are positive for anti-HCV antibodies.³ The prevalence and genotypic distribution of HCV in the Indian population shows regional disparity due to variations in social, economic and health factors in diverse regions, subsequently leading to variations in carrier rates from one corner of the country to other. Hence, HCV has emerged as an infectious disease of serious concern, causing a wide spectrum of chronic hepatic abnormalities ranging from minimal cirrhosis to hepatocellular carcinoma.⁴

Researchers opine that there is a requirement for a systematic population based study on the epidemiology of HCV in India. The studies that are available are mainly focused on special locales and populations such as blood banks and blood donors. While, blood donors are considered as surrogates for the population at large, some researchers express that this assumption may be a fallacy as most studies were conducted on young adults, predominantly males.⁵ Thus, sero-prevalence in females and other age groups like children and the aged cannot be estimated appropriately.⁶

<table>
<thead>
<tr>
<th>Groups</th>
<th>Prevalence rate</th>
<th>Reference</th>
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<tbody>
<tr>
<td>Blood donors group</td>
<td>1.8% to 2.5%</td>
<td>Choudhari G and Pal 2005²</td>
</tr>
<tr>
<td>Community</td>
<td>0.87%</td>
<td>Choudhari G and Pal 2005²</td>
</tr>
<tr>
<td>Health care workers</td>
<td>0 to 4%</td>
<td>Arankalle et al 1995⁷</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ganju and Goyel 2000⁸</td>
</tr>
<tr>
<td>Dialysis and renal transplant</td>
<td>24 to 28%</td>
<td></td>
</tr>
<tr>
<td>IV drug users</td>
<td>92 %*</td>
<td>Saha et al 2000⁶</td>
</tr>
<tr>
<td>HCV in HIV positive individuals</td>
<td>21.4 %</td>
<td>Bhattacharya et al 2003⁹</td>
</tr>
</tbody>
</table>

*Among 77 Manipuri couples who were HIV seropositive intravenous drug users
Incidence and Diagnosis

Unfortunately, there is a paucity of data and need for large population based studies on a national level that can measure the epidemiology of HCV in the general population. Presently the epidemiology of HCV is based on few isolated reports on blood bank and region specific data. The exact number of cases or individuals diagnosed with HCV in India as a whole is not known and moreover there exists no data or report on the rate of new infections.\(^\text{10}\)

Mortality rate

The World Health Organization (WHO) estimates that the mortality rate of HBV and HCV combined is tenfold higher than that of HIV. In India alone, the HCV related death exceeds over 100,000 per year.\(^\text{11}\)

References

1. WHO- Fact sheet N°164 updated on July 2013
2. Dr. G. Choudhuri and Dr. Sanjoy Kumar Pal – HEPATITIS C: THE INDIAN SCENARIO, Jun-July 2005, 46 to 53
5. Mukhopadhya A 2008 Hepatitis C in India; J. Biosci. 33 465–473
10. Sievert et al. Liver International ( 2011) ISSN 1478-3223
Pipeline Molecule - Sofosbuvir

The present standard of care being used globally for the treatment of hepatitis C infection involves peg interferon + ribavirin with or without telaprevir / boceprevir. However, these drugs pose various drawbacks such as complex dosing, poor adherence and tolerability, moderate response rates, high cost of therapy. Therefore there is a great need for more effective therapies which achieve higher cure rates more rapidly, with fewer side effects in a more cost effective manner than the current therapeutic options.¹

In the pharmaceutical industry, hepatitis C has one of the most crowded drug developmental pipelines. Currently the research focus is on ‘Interferon free therapy’, which primarily includes protease inhibitors, polymerase inhibitors and NS5A inhibitors. Hepatitis C clinical trials in phase II and III currently have at least 28 interferon-free regimens under investigation. With multiple pharmaceutical majors competing for a share in the HCV market, pipeline development has progressed at a breakneck speed. Candidate drugs which are at the most advanced stage of development are sofosbuvir and simeprevir.¹ ² ³

Introduction

Sofosbuvir is one of the most promising pipeline molecules for the treatment of hepatitis C infections. Formerly called as GS-7977/ PSI-7977, sofosbuvir is a nucleotide analogue inhibitor of the HCV NS5B protein. Unlike conventional ribavirin and pegylated interferon, sofosbuvir is a direct-acting agent. It interferes directly with the HCV life cycle by inhibiting the NS5B protein, therefore suppressing viral replication.⁴ ⁵

Gilead sciences, Inc. owns all rights for sofosbuvir. It was discovered at pharmasset and then acquired for development by Gilead sciences. The company expects sofosbuvir to become a cornerstone of interferon-free treatment for HCV especially
for genotype 2 and 3. In comparison to the existing therapy, sofosbuvir based therapy offers shorter duration of therapy (12 to 16 weeks), higher response rates which would in turn translate into better overall cure rates. It also offers convenient oral dosing with a once-daily administration at reduced cost.\textsuperscript{5, 6}

**Intended use**
Sofosbuvir is intended to be used along with ribavirin as an all-oral therapy for patients with genotype 2 and 3 HCV infection. In genotype 1, 4, 5 and 6 HCV infections, sofosbuvir is to be used in combination with ribavirin and pegylated interferon, only in treatment naïve patients.\textsuperscript{4, 6}

**Clinical studies**
Key clinical trials of sofosbuvir include four phase III studies: NEUTRINO, FISSION, POSITRON and FUSION. The trials showed 12 or 16 weeks of sofosbuvir-based therapy to be either superior or non-inferior to currently available treatment options.\textsuperscript{4, 6}

**Regulatory status**
Gilead submitted a New Drug Application (NDA) to the U.S. Food and Drug Administration (FDA) on April 8, 2013.\textsuperscript{4, 5}

The U.S. FDA has granted priority review to sofosbuvir on June 7, 2013 and has also set a target review date under the prescription Drug User Fee Act (PDUFA) on December 8, 2013.\textsuperscript{4, 5}

Gilead also submitted a marketing authorisation application for sofosbuvir to the European Medicines Agency (EMA) on April 17, 2013. EMA accepted Gilead’s request for accelerated assessment for sofosbuvir in May 2013, which could shorten EMA’s review time by approximately two months.\textsuperscript{6}
Market entry

If approved, sofosbuvir could be available in the EU in the first half of 2014. With FDA’s target review date for sofosbuvir of Dec 8, 2013, the drug could be available at approximately the same time even in the US. The approval of sofosbuvir would not only be a booster for Gilead’s top line but also has the potential to become the game changing hepatitis C treatment.

References


HCV Genotype

Introduction

HCV belongs to the family Flaviviridae and its genome consists of a single-stranded, positive sense RNA chain of 9.6-kb length. After the discovery of the virus in 1989, it was found that its genome had substantial nucleotide sequence diversity. On this basis, 6 major genotypes and more than 120 subtypes have been identified. There is a 30-35% variation in the genome within types and 20-25% variation within subtypes.\textsuperscript{1,7}

The HCV genome encodes a large poly protein that forms various structural (core, E1 and E2) and non-structural (NS2–NS5) peptides. The three N-terminal HCV proteins (core, E1, and E2/NS2) are believed to be structural in nature and the four C-terminal proteins (NS2, NS3, NS4, and NS5), functional.\textsuperscript{2}

Genotype Geographical Distribution\textsuperscript{2}

<table>
<thead>
<tr>
<th>Genotype</th>
<th>Distribution</th>
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<tbody>
<tr>
<td>1a</td>
<td>The United States and Europe</td>
</tr>
<tr>
<td>1b</td>
<td>Worldwide with a high prevalence in the United States, Europe and Japan</td>
</tr>
<tr>
<td>2a and 2b</td>
<td>North America, Europe and Japan</td>
</tr>
<tr>
<td>2c</td>
<td>Northern Italy</td>
</tr>
<tr>
<td>3</td>
<td>Indian subcontinent, Southeast Asia and Indonesia</td>
</tr>
<tr>
<td>4</td>
<td>North Africa and the Middle East</td>
</tr>
<tr>
<td>5</td>
<td>South Africa</td>
</tr>
<tr>
<td>6</td>
<td>Hong Kong</td>
</tr>
</tbody>
</table>

Table 1: HCV genotype geographical distribution
Table 1 and Fig. 2 represent a summary of the geographical distribution of HCV genotypes. However, the prevalence may vary within a country owing to factors like immigrant population, presence of IV drug users, presence of mixed genotypes and subtypes.²

![Fig. 2: Worldwide Distribution of Hepatitis C Genotypes](image)

**Methods of determining genotype**

It is important to identify and analyse the correct genomic region for genotyping, as it should contain subtype and type specific sequence that adequately represent the diversity of the genome. With this in focus, many genomic regions of the HCV genome have been studied, such as 5′ NCR, CORE, E1 and NS5B, out of which NS5B is often used in research studies. 5′ NCR is a conserved sequence in HCV genome, that is, the nucleotides in the RNA is similar across multiple genotypes. Although it does not represent an accurate differentiation of all types and subtypes, many diagnostic tests utilize this region due to ease in developing assays.⁶ With reference to the method of genotype identification, the most accurate method is direct nucleotide sequence analysis. Due to costs associated, other quick and less expensive methods to identify genotypes have been developed for routine clinical use. Most of them use Polymerase Chain Reaction (PCR) in an innovative manner. One of them utilizes pre-developed primers that are genotype specific. Following this, PCR is used to amplify the sequences that are complimentary to these primers and the sequences are then analyzed. Another method is restriction fragment length polymorphism (RFLP) which uses restriction enzymes to remove specific nucleic acid fragments and then studies them by their differential migration...
on agarose gel electrophoresis. Another method is the line probe assay which uses genotype-specific probes embedded on a nitrocellulose strip; amplified nucleotide sequence from the 5’ NCR of HCV genome differentially hybridize to this probe embedded strip if the sequence is complementary. Genotype can also be identified through the use of genotype-specific antibodies using an immunoblot in which genotype-specific antigens for HCV NS4 region is used and antibodies are identified.\(^8\) Other methods for genotyping HCV that have been developed are primer-specific and mispair extension analysis and heteroduplex mobility analysis.\(^6\) The most widely used of these surrogate typing methods, for commercial purposes in laboratories, is line probe assay.\(^7\)

However, there are some challenges in performing genotype tests on an individual. The result may not be achieved or may be inaccurate in patients with low viral loads and in mixed genotype infection. For accurate diagnosis of the genotype, serum should be collected and transported under certain conditions or it may lead to false positive results.\(^9\)

**Implications of genotyping**

Early determination of genotype is important for taking decisions regarding treatment duration and response to therapy. A 24-week treatment is required for patients with genotype 2 and 3, whereas a 48-week treatment is recommended for patients with genotype 1, when treated with interferon plus ribavirin.\(^{10}\) However, genotype generally does not have a major role in the liver disease progression and it cannot be used as a prognostic marker of the disease outcome. Disease outcome and complications depend on various viral, host and environmental factors such as immune response, viral replication, transmission and adaptability.\(^2\)

The heterogeneous nature of HCV due to genomic variability, the lack of an appropriate cell culture and animal models complicate the development of an effective vaccine.\(^2\)

Since genotype variation follows a geographical distribution, this data is crucial for epidemiologists. We know that HCV strains 1, 2, 3 and 4 are present worldwide, but genotypes 5 and 6 are limited to certain geographical areas. So, genotype study may help trace the source of HCV infection in a population.\(^2\) Apart from this, genotypes differ in the modes of transmission as well. Genotypes 1a and 3a are generally found in patients who acquire HCV via intravenous drug use, whereas genotypes 1b and 2 are found in patients who acquire HCV through blood transfusion.\(^3\) A clear understanding of the geographical distribution of genotypes may also guide authorities concerned
in outlining policies, allocating budgets accordingly and working upon the treatment guidelines.²

References


First patient treated with Civacir post hepatitis C induced liver transplantation in Biotest’s phase III clinical trial; August 05, 2013

With the first patient being treated in its phase III clinical trial, Biotest AG has achieved another milestone in the development of Civacir, the 10% hepatitis C hyper-immune globulin. The trial is being conducted in North America in patients undergoing liver transplantation as a consequence of hepatitis C infection. The aim of this study is to evaluate the efficacy and safety as well as the pharmacokinetics of the agent in the HCV transplant population. Civacir has an orphan drug designation in both the US and the EU.

End-stage liver disease due to HCV is a common indication for liver transplantation. However, newly transplanted livers are rapidly infected by any HCVs which are still circulating in the patient’s body. Approximately 30% of these patients require a second liver transplantation within 5 years. Currently, there is no approved treatment available to prevent recurrence of the HCV after surgery.


Cure for hepatitis C virus comes closer to reality;
Washington, August 03, 2013

Researchers from the Icahn School of Medicine at Mount Sinai have shown for the first time that the hepatitis C virus (HCV) can replicate in monkeys by differentiating monkey stem cells into liver cells and inducing successful infection. Scientists have tried for decades to develop animal models to study HCV, but the virus was incapable of infecting any species except for humans and chimpanzees. With a recent National Institutes of Health-imposed moratorium restricting chimpanzee research, the Mount Sinai research team turned to a close relative of chimpanzees and humans – macaques, intending to find out why previous attempts to infect macaques with HCV failed.
Cure for hepatitis C virus comes closer to reality;
Washington, August 03, 2013

The new findings may lead to creating a new animal model and provide new avenues for developing treatments and vaccines for this disease.


Project to combat hepatitis B in Tibetans has been launched;
India, August 03, 2013

In collaboration with the John Hopkins University, the Health Department of the Central Tibetan Administration, has launched a hepatitis B pilot project in Tibetan settlements in Bylakuppe, in the southern Indian state of Karnataka. The goal of the study is to facilitate hepatitis B prevention and treatment in the Tibetan community in the near future. According to Trinley Palmo, a Health Department official, from July to October 2013, Johns Hopkins University will work with nurses from Tso the Khangsar Hospital to implement a study of hepatitis B in the settlements. The findings from this project will be used to estimate the current rate with which hepatitis B is spreading within the Tibetan community and the proportion of the infected population who may benefit from hepatitis B vaccination and medical treatment. Information on the current treatment regimen can also be collected through the study.

http://www.examiner.com/article/project-to-combat-hepatitis-b-tibetans-has-been-launched

Mumbai’s slums get hepatitis awareness;
Mumbai, August 02, 2013

On the occasion of WHD, NGOs in Mumbai - United Way of Mumbai and AmeriCares India Foundation - came forward to educate and spread awareness among slum communities in Mumbai. Rallies and street plays were organized by these NGOs at the Korba Mitha Nagar slum in Wadala,
Mumbai’s slums get hepatitis awareness;
Mumbai, August 02, 2013

Mogarapada slum in Andheri and Ayodhya Nagar slum in Chembur. Green Ribbon Brigadiers - 160 student volunteers across 6 city colleges - carried placards, posters and banners with the logo “Hepatitis. Know it. Confront it” and conducted door-to-door interactions in the communities to educate the community members with basic information on hepatitis infections. According to Jayanti Shukla, Executive Director, United Way of Mumbai, WHD provides an opportunity to focus on specific actions such as hepatitis awareness campaigns and to confront the stigma and discrimination associated with the disease.

http://articles.timesofindia.indiatimes.com/2013-08-02/mumbai/41005755_1_hepatitis-awareness-world-hepatitis-day-andheri

China nixes patent for Gilead’s HIV, hepatitis drug Viread;
China, August 02, 2013

The patent protecting Gilead’s HIV and hepatitis B drug Viread has been revoked by Chinese officials. According to Robert McTiernan, China health analyst of IHS Healthcare, the move gives China greater leverage in ongoing negotiations with drug companies around pricing. For Gilead, it is another strike against Viread, which has also had its patent protection reversed in India and Brazil.

Taking away Viread’s patent would allow local companies to produce Viread’s active ingredient, tenofovir, generically at a time when international aid organizations are cutting grants to China for fighting the AIDS virus. For instance, Aunisco, a major Chinese manufacturer of active pharmaceutical ingredients in China, had challenged Gilead’s patent. It wants to sell the drug in China and export it to countries where it is not patented.

Engineered mice act as hepatitis C model;
New Jersey, July 31, 2013

Attempting to shift away from chimpanzees as the only animal models for studying hepatitis C infection, Alexander Ploss, a virologist at Princeton University in New Jersey, and his colleagues came up with an alternative model to test potential drugs and vaccines: a mouse model in which the whole spectrum of hepatitis C replication can be studied. Mice are naturally immune to hepatitis C, however, the researchers succeeded to transform the rodent into a model organism for studying infections with the virus by genetically altering the animals to hamper their natural immune response. The team also engineered the animals to produce proteins found on the outside of human liver cells, and this advance can contribute significantly to the development of a vaccine against the virus.


July 31 was declared as ‘hepatitis C testing day’ in Washington DC;
Washington, July 31, 2013

According to results from a survey conducted by genentech as a part of the WHD program, Washingtonians are extremely misinformed about hepatitis C. The survey found that 62% of baby boomers in DC have never been tested for the virus, despite the fact that the Centers for Disease Control (CDC) and United States Preventive Services Task Force recommend all baby boomers born from 1945 to 1965 get screened. In addition, 40% of those surveyed said they would rather admit to a DUI than to being infected with HCV. Thus, in order to contribute to the cause, Mayor Vincent Gray declared 31st July as the hepatitis C Testing Day in Washington DC.


Activists demand cheaper hepatitis C drugs;
Jakarta, July 30, 2013

A group of 14 non-governmental organizations running a campaign titled “People living with HIV/AIDS (ODHA) have a right to health” signed an online
Activists demand cheaper hepatitis C drugs;
Jakarta, July 30, 2013

petition urging a drug manufacturer to offer hepatitis C drugs at lower prices. The petition, launched via public campaign platform change.org, is aimed at urging Roche Indonesia to immediately cut the prices of hepatitis C drugs. Currently, hepatitis C medication costs around Rp 25 million (US$2,425) per month, with medication until recovery costing more than Rp 250 million per patient. Aditya Wardhana, Indonesia AIDS Coalition executive director, explains the cause: “The role of our government in regulating the trade of pharmaceuticals is still very weak. As a result, multinational companies can set the prices of drugs as they like.”


One in 50 residents of Bangalore is prone to hepatitis B, finds survey;
Bangalore, July 29, 2013

BGS Global Hospitals in association with Integrated Liver Care (ILC) Foundation launched the ‘Bengaluru Hepatitis Project’ - an on-going survey to collect data on hepatitis B and hepatitis C infections among the urban population. The study has revealed that one in every 50 Bangloreans may have hepatitis B and one in 200 may have hepatitis C.

Over 1,900 young professionals, students and adults were tested over a five-week period. 54 % of the test subjects were males, 78 % were under the age of 40 and 37 % were children under the age of 15. The study found that the prevalence of hepatitis B among the subjects was 1.7%, while hepatitis C was 0.2%. Those in the age group of 20 to 40 showed the highest incidences of infection.

The majority of those infected were males - around 64%. According to Dr Sonal Asthana, BGS Global Hospitals, as hepatitis B and C are spread through transfusion of infected blood, contaminated needles and sexual transmission, the incidence may be higher in males because of the usage of unsterilized equipment in barber shops or tattoo parlours.

http://www.deccanherald.com/content/347898/one-50-residents-prone-hepatitis.html
The protease inhibitor Victrelis (boceprevir), when added to a regimen of interferon and ribavirin, vastly improves cure rates of hepatitis C virus (HCV) and does not raise significant treatment risks among people coinfected with HIV, according to findings published in The Lancet and reported by the Skin & Allergy News Digital Network. The investigators conducted a double-blind, randomized, controlled Phase II trial of 99 coinfected adults who had untreated genotype 1 of hepatitis C and an undetectable HIV viral load. The study was conducted at 30 sites throughout 2010 and continued for 44 weeks.

http://www.aidsmeds.com/articles/Victrelis_coinfected_1667_24273.shtml

Gilead Sciences announced that the U.S. Food and Drug Administration (FDA) has granted priority review to the company’s New Drug Application (NDA) for sofosbuvir, a once-daily oral nucleotide analogue inhibitor for the treatment of chronic hepatitis C virus (HCV) infection. The data submitted in this NDA support the use of sofosbuvir and ribavirin (RBV) as an all-oral therapy for patients with genotype 2 and 3 HCV infection, and for sofosbuvir in combination with RBV and pegylated interferon (peg-IFN) for treatment-naïve patients with genotype 1, 4, 5 and 6 HCV infection. FDA has set the target review date under the Prescription Drug User Fee Act (PDUFA) of December 8, 2013. The FDA grants priority review status to drug candidates that may offer major advances in treatment over existing options.

One in 12 people worldwide is living with either chronic HBV or HCV. ‘Am I Number 12?’

500 million people in the world are currently infected with HBV and HCV.

3 out of 4 people with HCV infection are not aware of it.

40 Million HBV carriers in India: Equal to population of Poland.

HBV and HCV are the major causes of liver cancer.

50-100X HBV is 50 to 100 times more infectious than HIV.

HAV/HEV: Contaminated food or water
HBV: Blood or body fluids, unprotected sex
HCV: Direct blood to blood contact

HBV/HCV: Both infections are not spread through everyday contact, e.g. shaking hands.

HAV/HEV: Due to poor sanitation, the highest infection rates are in emerging economies (like India)

HCV: A previous outbreak of HEV in UP state had affected ~79,000 people.

Major Routes of Transmission

- Unprotected sex
- Blood transfusion
- Sharing needles
- Mother to child
- Using the toilet
- Sharing utensils (toothbrushes & razors)
- Sharing (food/water)

What you can do

1. See a doctor
2. Get vaccinated
3. HBV
4. HCV

FSRC - focus scientific research center

HAV - Hepatitis A virus
HCV - Hepatitis C virus
HEV - Hepatitis E virus
HBV - Hepatitis B virus
HDV - Hepatitis D virus
UP - Uttar Pradesh

* The risk of transmission of Hepatitis C during unprotected sex is considered very low, especially if you are in a long-term, stable relationship. This risk may be higher among men who have sex with men or if blood is involved.
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