Parallel session – Prevention: Injection Safety

Presenter:
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Team Lead, Global Hepatitis Programme
World Health Organization
Use of injections worldwide

Immunization injections: 5% to 10%
Therapeutic injections: 90 to 95%
16.7+ billion/year
Infections due to unsafe injections worldwide in 2000

- Unsafe injection practices, annually cause:
  - 21 million hepatitis B infections (30% of new cases)
  - 2 million hepatitis C infections (41% of new cases)
  - 260 000 HIV/AIDS infections (9% of new cases)
  - 1.3 million premature deaths
  - loss of 26 million years of life
  - direct medical costs of US$535 million

*Hutin et al, 2003; Hauri et al, 2004*
Number of healthcare injections/person/year in selected Global Burden of Disease regions, 2010

Pepin J et al: PLOSOne 2013
Medical injections as a core group of HCV transmission

Zwyat Razin, 2002, n=4020

A

number of injections per year

B

number of medical interventions per year

fraction of individuals (%)
### Health care related risk factors among acute hepatitis C cases and controls, Cairo 2002-7

<table>
<thead>
<tr>
<th>Procedure</th>
<th>HCV cases %</th>
<th>HAV controls %</th>
<th>Family controls %</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital admission</td>
<td>16</td>
<td>3</td>
<td>5</td>
<td>3.8 (1.6-8.8)</td>
</tr>
<tr>
<td>Surgery</td>
<td>8</td>
<td>2</td>
<td>1</td>
<td>5.3 (1.4-20.1)</td>
</tr>
<tr>
<td>Stitches</td>
<td>22</td>
<td>6</td>
<td>3</td>
<td>5.1 (2.2-11.5)</td>
</tr>
<tr>
<td>IV injections</td>
<td>10</td>
<td>1</td>
<td>3</td>
<td>4.3 (1.3-14)</td>
</tr>
<tr>
<td>IM injections</td>
<td>14</td>
<td>13</td>
<td>19</td>
<td>0.8 (0.4-1.7)</td>
</tr>
<tr>
<td>IV cannula</td>
<td>14</td>
<td>5</td>
<td>4</td>
<td>3.3 (1.3-8.5)</td>
</tr>
</tbody>
</table>

Paez Jimenez. PlosOne 2009
<table>
<thead>
<tr>
<th>Evaluation of injection practices, 2000 and 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of healthcare injections (per person per year)</strong></td>
</tr>
<tr>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Proportion of re-use during healthcare injections</strong></th>
<th>2000</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.398</td>
<td>0.055</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Number of unsafe healthcare injections (per person per year)</strong></th>
<th>2000</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.35</td>
<td>0.16</td>
</tr>
</tbody>
</table>

WHO Injection Safety programme /SIGN strategies

1. **Patient Safety**
   - Reduction of unnecessary injections (Advocacy, IEC, revision of list of essential medicines)
   - Eliminating reuse of injection equipment (ADs, RUPs)

2. **Health Workers' Safety**
   - NSI prevention (training, SIPs, sharps boxes)
   - Hepatitis B vaccination
   - Provision of Post Exposure Prophylaxis (PEP)
New WHO Injection Safety Policy and Campaign

• **Main objective:** to promote rational and safe use of injections
  
  • Reduce re-use of syringes, especially in **curative** injections
  
  • Reduce overuse of injections and promote rational use
  
  • Ensure sufficient supply availability through procurement channels and improved planning
  
  • Calls for a transition to exclusive use of "smart" syringes, as appropriate
  
  • Calls for countries and all partners to support implementation
Policy Implementation: WHO

- Supports development of national policies in keeping with the NEW WHO policy
- Galvanizes support from the international community
- Secures evidence on benefits and cost effectiveness
- Builds on efforts of SIGN
INJECTION SAFETY IN PAKISTAN

Dr. Huma Qureshi
Executive Director
Pakistan Medical Research Council (PMRC)
Pakistan, National Lead Viral Hepatitis Control
Background

- Population: 179 Million
  - # 6 in population worldwide

- 4 Provinces:

- Healthcare:
  - Highest rate of therapeutic injections in the world
  - 70% pop visits private sector for health issues
  - 60-70% expenditure is out of pocket
Pakistan: a cirrhotic state?

Routine reuse of syringes in Pakistan’s back-street health centres has caused a surge in blood-borne infections such as hepatitis B and C, which experts have dubbed “the AIDS of Pakistan”. But to solve this problem, Pakistan must first wean itself off injections. Khabir Ahmad reports.

- **Up to 13 injections/person/year**

Viral Hepatitis Timeline, Pakistan

• Prior to 2005, few studies and little data available

• Prime Minister’s Program for Hepatitis Prevention & Control: 2005-2010
  • Lancet article helped bring viral hepatitis to forefront

• 2008: PMRC conducted a National Hepatitis Sero survey
  • One of few lower/middle income countries with national data

• 2009: CDC/DVH collaboration began with sentinel surveillance project

• 2011: Devolution of MOH
  • PM’s Program became Chief Minister’s programs in Provinces
Viral Hepatitis Prevalence, Pakistan

- Large burden of Viral Hepatitis
  - Chronic HCV prevalence: 5% (8 million)\(^1\)
    - Genotype 3 predominant\(^2\)
  - Chronic HBV prevalence: 2.5% (4 million)\(^1\)
  - HAV & HEV are endemic\(^3\)

- Liver disease: Leading cause of mortality

Estimated HCV Infection Burden by Country, 2014

Pakistan: 2nd largest burden of HCV in the world

Estimated HCV Annual Incidence Pakistan 1950 - 2015

- it is estimated that there are 240 thousand new infections/year

Source: Homie Razavi, APASL STC, Karachi, October 2014.
Factors for HCV
## Risk factors for HCV transmission

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>No. of Subject</th>
<th>HCV No. (%)</th>
<th>OR (95% C.I.)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Use of therapeutic IM Injection</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>10987</td>
<td>402 (3.7)</td>
<td>Reference</td>
</tr>
<tr>
<td>2 – 5</td>
<td>22623</td>
<td>1007 (4.5)</td>
<td><strong>1.2 (1.1 - 1.4)</strong></td>
</tr>
<tr>
<td>5 -10</td>
<td>10492</td>
<td>641 (6.1)</td>
<td><strong>1.7 (1.5 - 1.9)</strong></td>
</tr>
<tr>
<td>&gt; 10</td>
<td>2941</td>
<td>244 (8.3)</td>
<td><strong>2.4 (2.0 - 2.8)</strong></td>
</tr>
<tr>
<td><strong>Type of Syringe</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>10987</td>
<td>402 (3.7)</td>
<td>Reference</td>
</tr>
<tr>
<td>New/disposable</td>
<td>15563</td>
<td>552 (3.5)</td>
<td>0.9 (0.8 - 1.1)</td>
</tr>
<tr>
<td>Re-used</td>
<td>17696</td>
<td>1198 (6.8)</td>
<td><strong>1.9 (1.7 - 2.2)</strong></td>
</tr>
</tbody>
</table>
Therapeutic injection use as risk factor

- 1 = review
- 1 = meta-analysis
- 3 = case control
- 8 = institutional studies

- therapeutic injection use as the major risk factor for HCV transmission
## Risk Factors for Acute Hepatitis surveillance, 2010-2011

### Distribution of self-reported risk factors

<table>
<thead>
<tr>
<th>Exposure within 6 wks of infection diagnosis</th>
<th>Newly reported Hepatitis B</th>
<th>Newly reported Hepatitis C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact with jaundiced person</td>
<td>14.3%</td>
<td>23.7%</td>
</tr>
<tr>
<td>Blood transfusion</td>
<td>2.6%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Surgery</td>
<td>14.3%</td>
<td>7.7%</td>
</tr>
<tr>
<td>Visit to dentist</td>
<td>24.7%</td>
<td>18.6%</td>
</tr>
<tr>
<td>Therapeutic injections</td>
<td>62.3%</td>
<td>44.1%</td>
</tr>
<tr>
<td>IV infusions</td>
<td>40.3%</td>
<td>26.9%</td>
</tr>
<tr>
<td>Injection drug use</td>
<td>0%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Skin piercing</td>
<td>18.2%</td>
<td>6.1%</td>
</tr>
</tbody>
</table>

Federal Government’s response

1. Formulation of Tech Advisory Group (TAG)
2. Injection safety campaign in 26 high hepatitis districts
3. Development and dissemination of IEC material
4. Awareness campaign
5. Advocacy with parliamentarians and policy makers
1. Formulation of Technical Advisory Group on Hepatitis

- Federal Ministry Gazette notified TAG on viral hepatitis
- Members are national and international public health experts, gastroenterologists, CDC and WHO
- Gives technical support and guidance to Federal & Provincial govt. on prevention and control of hepatitis
  - Hepatitis strategy targeting interventions on high impact risk factors
  - Introducing birth dose of hepatitis B
  - Availability and price reduction of sofosbuvir
  - Computerized data collection on hepatitis treatment-
  - Hepatitis C treatment guidelines
2. Injection Safety Campaign in 26 high hepatitis prevalence districts

- Collaboration of WHO & Medical Research Council
  - **2189 health facilities in 26 districts**
  - 500 master trainers trained on infection control
  - 10,000 WHO approved needle cutters and sharp containers
  - Infection control manuals
  - Infection control posters
  - small pocket book for all HCW-local language
3. Development and Dissemination of IEC material

- IEC material containing messages for the prevention and control of hepatitis C include:
  - posters
  - banners
  - advocacy toolkit
  - brochure/pamphlets
4. Awareness campaign

• Through electronic media (radio & TV)
• News articles (newspapers)
• Celebrating WHD at National and Provincial level
5. Advocacy with parliamentarians and policy makers

- Sensitized on hepatitis;
  - Disease burden in the country
  - Risk factors for disease transmission
  - Interventions to prevent & control disease
  - Their role to support the cause
Next Steps

Developing National Strategic Plan of Action for the Prevention and Control of Viral Hepatitis

- Information, education, awareness
- Surveillance
- Vaccination
- Infection control is a priority
  - Injection safety
  - Blood safety
- Care and Treatment
  - Introduction of DAAs
Viral Hepatitis, Pakistan: Conclusions

- Large burden of viral hepatitis & many challenges
  - HCV & HBV > 12 million infected
  - Ongoing transmission
  - Devolution (coordination problems)
- Provinces are putting large resources into prevention & control programs
  - Significant gaps exist in Provincial Hepatitis Control Programs
- Pakistan collaborators are moving the hepatitis control agenda forward
  - TAG, PMRC, AKU, Provinces, Public & Private Physicians
- CDC is providing technical & financial assistance
- More assistance is welcomed, as we have much to accomplish
THANK YOU
### Other Risk factors for disease transmission in HCV

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<thead>
<tr>
<th>Risk Factors</th>
<th>No. of Subject</th>
<th>HCV No. (%)</th>
<th>OR (95% C.I.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood transfusion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>46640</td>
<td>2237 (4.8)</td>
<td>Reference</td>
</tr>
<tr>
<td>Yes</td>
<td>403</td>
<td>57 (14.1)</td>
<td><strong>3.2 (2.4 – 4.4)</strong></td>
</tr>
<tr>
<td>History of Hospitalization</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>44757</td>
<td>2071 (4.6)</td>
<td>Reference</td>
</tr>
<tr>
<td>Yes</td>
<td>2286</td>
<td>223 (9.8)</td>
<td><strong>2.2 (1.9 - 2.6)</strong></td>
</tr>
<tr>
<td>Dental treatment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>46347</td>
<td>2235 (4.8)</td>
<td>Reference</td>
</tr>
<tr>
<td>Yes</td>
<td>696</td>
<td>59 (8.5)</td>
<td><strong>1.8 (1.4 – 2.4)</strong></td>
</tr>
<tr>
<td>History of Surgery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>45189</td>
<td>2147 (4.8)</td>
<td>Reference</td>
</tr>
<tr>
<td>Yes</td>
<td>1854</td>
<td>147 (7.9)</td>
<td><strong>1.7 (1.4 – 2.1)</strong></td>
</tr>
</tbody>
</table>

OR = Odd Ratio, C.I. = Confidence Interval, Statistically significant ** p<0.01