Viral hepatitis C in the context of high risk sex and key populations in South Africa

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Disclosures

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Overview

• Overview of hepatitis C
• Global epidemiology
• South African data on HCV among key populations
• Conclusions and recommendations
Hepatitis C virus

- RNA virus
- Rapid replication - \(10^{12}\) virions produced per day
- No RNA polymerase and no proofreading ability of new viruses – resulting in many mutations
- Six viral genotypes: 1 - 6
Transmission

Hepatitis C is transmitted through BLOOD contact

**PARENTERAL ROUTE**
- Most efficiently
- Predominant risk among people who inject with contaminated injecting equipment
- Needle-stick injuries
- Blood/blood products before 1992
- Tattooing, body piercing
- ? Traditional/cultural practices

**SEXUAL TRANSMISSION**
- Lower risk than HBV and HIV
- Elevated risk in ‘high risk’ or prolonged sex
  - Men who have sex with men
  - High risk sex practices

**MOTHER-TO-CHILD TRANSMISSION**
- 1-5% infants born to HCV infected women
- Vertical transmission risk increases to ~20% in HIV/HCV co-infected mothers
Global epidemiology
HCV incidence, general population (2015)

WHO Global Hepatitis report 2017
Natural history

- **Acute HCV**
  - 55% - 85%

- **Chronic HCV infection**
  - 5% - 25%

- **Cirrhosis**
  - 95% - 99%
  - 5% to 25%

- **Decompensation and / or Hepatocellular cancer**
  - 1% - 4% / yr

- **Resolution of acute infection**
  - 15% - 45%

- **Stable slowly progressive infection**
  - 75% - 95%

- **Stable compensated cirrhosis**
  - 95% - 99%

*Extrahepatic manifestations*
- autoimmune disorders
- porphyria cutanea tarda
- lymphoproliferative disorders
- insulin resistance
Factors progressing infection

• Previous and concurrent alcohol consumption
• Older age at time of infection (>40 years)
• Male gender
• Other co-morbidities:
  - HIV / HCV co-infection
  - HIV / HBV co-infection
  - Obesity
  - Iron overload
Diagnosis

**Screening Hepatitis C antibody test***

Positive $\downarrow$
- **Confirmation using nucleic acid testing (RNA testing)**

Positive $\downarrow$
- **ACTIVE HEPATITIS C INFECTION. (Genotyping)**

Negative $\rightarrow$
- **Virtually excludes infection**

Negative $\rightarrow$
- **No active infection – likely previous cleared infection**

* Future role of HCV core Ag testing in high prevalence settings

**Indications for screening**
- People who inject drugs
- Received blood/ organs pre-1992
- Unsafe medical injections
- Occupational exposure
- Chronic haemodialysis
- High-risk/traumatic sexual practices
- Men who have sex with men
- Use of intranasal cocaine
- Tattoos, piercing, acupuncture
- Surgical procedures without proper sterilisation procedures
- Traditional/cultural practices
Prevention & management

• No vaccine
• Prevention
  • Universal precautions and safe medical injections
  • Sterile injecting equipment and opioid substitution therapy for PWID
  • Condoms and lubricant
• Assess liver function, co-morbidities & medications
• Curative treatment with direct acting antivirals
  • All HCV infected people
  • Oral, combination treatment (12 – 24 weeks)
  • High cure rate (>90%), few side effects
  • No lasting immunity – potential for re-infection
  • Not yet registered in South Africa (SAHPRA)
  • Available via section 21
South African epidemiology

- Real seroprevalence of HCV is unknown
- Thought to be a low prevalence country
- Existing data suggests:
  - Urban blood donors (low risk): 0.01 - 2.6%
  - Higher rate in the rural population: 3.8%
  - Rates expected to be higher in high-risk groups
HCV among MSM & MSW (Cape Town) (n=500)

### Hepatitis C Infection Prevalence

<table>
<thead>
<tr>
<th></th>
<th>Screened positive, n</th>
<th>Prevalence, % (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All participants (N=500)</td>
<td>17</td>
<td>3.4 (2.1 - 5.4)</td>
</tr>
<tr>
<td>MSM (N=285)</td>
<td>16</td>
<td>5.6 (3.5 - 9.0)</td>
</tr>
<tr>
<td>Non-MSM (N=215)</td>
<td>1</td>
<td>0.5 (0.06 - 3.3)</td>
</tr>
</tbody>
</table>

CI = confidence interval; MSM = men who have sex with men.

### Genotypes:
- Genotype 1a - 50.0%
- Genotype 2 - 35.7%
- Genotype 4 - 14.3%
- Genotype 3 and 5 - 0%

### Risk Factors:
- White ethnicity
- Low CD4+ count
- Drug use (any method)
- Sex while high
- Sex with sex worker

Source: Cogela et al.,
HCV among MSM who use drugs (Cape Town) (n=41)

<table>
<thead>
<tr>
<th>Variable, participant demographics</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug-injecting behaviour</td>
<td></td>
</tr>
<tr>
<td>Ever injected</td>
<td>36 (88)</td>
</tr>
<tr>
<td>In the past 3 months</td>
<td>33 (80)</td>
</tr>
<tr>
<td>Non-intravenous</td>
<td>32 (78)</td>
</tr>
<tr>
<td>Intravenous and non-intravenous</td>
<td>27 (66)</td>
</tr>
<tr>
<td>Ever shared equipment or needles</td>
<td>29 (71)</td>
</tr>
<tr>
<td>Condom use in the past 3 months</td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>11 (27)</td>
</tr>
<tr>
<td>Some of the time</td>
<td>6 (15)</td>
</tr>
<tr>
<td>Most of the time</td>
<td>13 (32)</td>
</tr>
<tr>
<td>All of the time</td>
<td>6 (15)</td>
</tr>
<tr>
<td>Not reported/applicable</td>
<td>5 (12)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Infection</th>
<th>% (n/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCV antibody +ve</td>
<td>27% (11/41)</td>
</tr>
<tr>
<td>HBVsAg +ve</td>
<td>2% (1/41)</td>
</tr>
<tr>
<td>HIV +ve</td>
<td>40% (12/30)</td>
</tr>
<tr>
<td>HIV-HCV +ve</td>
<td>38% (3/8)</td>
</tr>
</tbody>
</table>

Source: Semugoma et al, SAMJ 2017
HCV initiative among Key Populations

• Aimed to recruit 3,500 Key Populations
• The study was linked to existing HIV prevention services and included:

- An assessment enquiring about demographics, substance use and risk practices
- HCV point-of-care (OraQuick®)
- HCV viral load
  (COBAS® AmpliPrep/ COBAS TaqMan® HCV test)
### Participant socio-demographic characteristics (per protocol analysis)

<table>
<thead>
<tr>
<th></th>
<th>SW</th>
<th>MSM</th>
<th>PWID</th>
<th>PWUD</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>N (%)</strong></td>
<td>1531 (44.5%)</td>
<td>747 (21.7%)</td>
<td>941 (27.3%)</td>
<td>224 (6.5%)</td>
<td>3443</td>
</tr>
<tr>
<td><strong>Age [median (Range)]</strong></td>
<td>29 (18 - 67)</td>
<td>29 (18 - 75)</td>
<td>29 (18 - 61)</td>
<td>29 (18 - 61)</td>
<td>29 (18 - 75)</td>
</tr>
<tr>
<td><strong>Gender [n (%)]</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>48 (3.2%)</td>
<td>718 (96.8%)</td>
<td>813 (87.0%)</td>
<td>181 (80.8%)</td>
<td>1760 (51.5%)</td>
</tr>
<tr>
<td>Female</td>
<td>1462 (96.2%)</td>
<td>0</td>
<td>121 (12.9%)</td>
<td>43 (19.2%)</td>
<td>1625 (47.5%)</td>
</tr>
<tr>
<td>TransMale</td>
<td>5 (0.3%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5 (0.1%)</td>
</tr>
<tr>
<td>TransFemale</td>
<td>5 (0.3%)</td>
<td>24 (3.2%)</td>
<td>1 (0.1%)</td>
<td>0</td>
<td>30 (0.9%)</td>
</tr>
<tr>
<td><strong>Race [n (%)]</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>1156 (76.3%)</td>
<td>417 (56.2%)</td>
<td>388 (41.5%)</td>
<td>120 (53.8%)</td>
<td>2080 (60.9%)</td>
</tr>
<tr>
<td>Coloured</td>
<td>308 (20.3%)</td>
<td>65 (8.8%)</td>
<td>258 (27.6%)</td>
<td>74 (33.2%)</td>
<td>705 (20.7%)</td>
</tr>
<tr>
<td>White</td>
<td>40 (2.7%)</td>
<td>239 (32.2%)</td>
<td>252 (27.0%)</td>
<td>24 (10.8%)</td>
<td>555 (16.3%)</td>
</tr>
<tr>
<td>Indian</td>
<td>11 (0.7%)</td>
<td>10 (1.4%)</td>
<td>36 (3.9%)</td>
<td>5 (2.2%)</td>
<td>62 (1.8%)</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>11 (1.5%)</td>
<td>0</td>
<td>0</td>
<td>11 (0.3%)</td>
</tr>
<tr>
<td><strong>Housing [n (%)]</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homeless</td>
<td>67 (4.4%)</td>
<td>18 (2.4%)</td>
<td>625 (66.8%)</td>
<td>116 (52.7%)</td>
<td>826 (24.2%)</td>
</tr>
<tr>
<td>Shelter</td>
<td>6 (0.4%)</td>
<td>5 (0.7%)</td>
<td>49 (5.2%)</td>
<td>19 (8.6%)</td>
<td>79 (2.3%)</td>
</tr>
<tr>
<td>Private Housing</td>
<td>1445 (95.2%)</td>
<td>716 (96.9%)</td>
<td>261 (27.9%)</td>
<td>85 (38.4%)</td>
<td>2506 (73.5%)</td>
</tr>
</tbody>
</table>
HBsAg, HCV and HIV prevalence, by population

- **Total Particpants (N)**
- **HBV positive**
- **HCV positive**
- **HIV positive**

### Breakdown by Population

- **Total KP**: 3443
  - HBV positive: 437 (13%)
  - HCV positive: 1260 (37%)
  - HIV positive: 141 (4%)

- **SW**: 1531
  - HBV positive: 61 (4%)
  - HCV positive: 713 (47%)
  - HIV positive: 25 (3%)

- **MSM**: 747
  - HBV positive: 0
  - HCV positive: 320 (43%)
  - HIV positive: 18 (2%)

- **PWID**: 941
  - HBV positive: 48 (5%)
  - HCV positive: 403 (45%)
  - HIV positive: 198 (21%)

- **PWUD**: 224
  - HBV positive: 7 (3%)
  - HCV positive: 16 (7%)
  - HIV positive: 29 (13%)
Conclusions & recommendations

• South Africa has committed to End Viral Hepatitis by 2030
• National Guidelines for the Management of Viral Hepatitis approved (Sep ‘18)
• HCV transmitted through blood contact, infrequently during sex
• Sexual transmission increased:
  • Traumatic or prolonged sex
  • In context of (injecting) drug use and sex
• Local data confirms very high HCV prevalence among people recruited/identified as PWID, and higher among MSM
• Emerging programmatic data of injecting drug use among sex workers (Johannesburg and North West)
• Hepatitis C can be cured, but must be provided as part of a comprehensive package, that embraces a broader harm reduction approach
Thank you

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Slides adapted from presentations by: Lorraine Moses, Mark Sonderup, Sarah Stacey, Kevin Rebe, Wendy Spearman, Nishi-Prabdial-Sing