Identifying the optimal care model for HCV in Cambodia

Momoko Iwamoto¹, Jean-Philippe Dousset², San Kimchamroeun², Theresa Chan², Antharo Kien², Muslim Peas², Vithurneat Hang², Keoputhika Unn², Josephine Walker³, Nyasha Mafirakureva³, Chhit Dimanche⁴, Tonia Marquardt², Suna Balkan², Anne Loarec¹, Mickael Le Paih², and David Maman¹

¹Epicentre; ²Médecins Sans Frontières; ³Population Health Sciences, Bristol Medical School; ⁴Hepato-Gastro Department, Preah Kossamak Hospital

All authors have no potential COI to declare
Imagine a hypothetical situation...
NGO (hypothetical)

- HCV program in rural, resource-limited context
- Estimated total: 250,000 cases
- Program capacity: treat 25,000 patients
- Patients are very poor
You need to decide which services you would provide in this HCV program.

But each service you include has a cost – the opportunity cost of not being able to treat another patient.
Would you screen patients for HCC?
Would you stage patients?
Would you try to identify patients with high risk varices?
Hold your thoughts!
One year ago…

- Returning patients
- New patients
In 3 months, total waiting list grew to >3500
Number of patient visits quickly increased to > 250 patient visits/day.
We HAD to figure out a better way to serve our patients...

to faster, but without jeopardizing the quality of care
Our care model at the beginning

Visit 1
Visit 2
Visit 3
Visit 4
Visit 5
Visit 6

CONGRATULATIONS SVR12 ACHIEVED!
We HAD to simplify
Operational Research

DCV/SOF GT6 + POC VL GT6 + Capillary RDT = One day diagnosis
Operational Changes

- Tease out screening
- Adapt cut-offs
- Task shift

= Efficiency
Full Care Model (initially)

Visit 1
- Counselling
- ELISA test

Visit 2
- Disclosure
- Counselling
- Viral Load

Visit 3
- Disclosure
- Counselling

Visit 4
- Genotype

Visit 5
- Fibroscan
- Disclosure

Visit 6
- Assessment
- Counselling
- Blood test
- HBsAg test
- Pregnancy test

Visit 7
- Family planning
- HIV test

Visit 8
- Endoscopy
- Ultrasound

Visit 9
- D1 Consultation
- D1 Counselling
- D1 Dispensing
- HBV vaccine

Visit 10
- D7 Consultation
- D7 Counselling
- D7 dispensing

Visit 11
- D14 Consultation
- D14 Counselling
- D14 dispensing
- Blood test

Visit 12
- M1 Consultation
- M1 Counselling
- M1 dispensing
- Blood test
- HBV vaccine

Visit 13
- M2 Consultation
- M2 Counselling
- M2 dispensing

Visit 14
- M3 Consultation
- M3 Counselling
- Blood test
- Viral Load test

Visit 15
- Consultation
- Blood test
- SVR12 VL test

Visit 16
- SVR disclosure
- Counselling
- HBV vaccine
Simplified Model (current)

Visit 1: RDT, POC VL test, Fibroscan
Visit 2: Assessment, Counselling, Blood test, HBsAg test
Visit 3: Endoscopy, Ultrasound, Family planning, HIV test, Pregnancy test
Visit 4: D1 Consultation, D1 Counselling, D1 Dispensing, HBV vaccine
Visit 5: M1 dispensing, HBV vaccine
Visit 6: M2 dispensing, HBV vaccine
Visit 7: M3 Consultation, M3 Counselling, Blood test, SVR disclosure
Visit 8: SVR12 VL test, HBV vaccine
Impact on operations

Treatment initiations per month (same number of physicians)

(N=2446)
Impact on operations

Median days between screening test and treatment initiation for new patients

(N=2446)
Impact on care quality

Retention of patients from screening to OPD

(N=4945)
Impact on care quality

Patients completing treatment course by month of initiation

(N=1984)
Impact on patient safety

Patients who did not develop SAEs during treatment

(N=1699)
Impact on patient outcome

Intention-to-treat (ITT) SVR12 by month of treatment initiation

(N=965)

ITT SVR12 95%
129000 screened
56550 diagnosed
2800 initiated
What’s next?
Simplified Care Model (now)

Visit 1: RDT test, POC VL test, Fibroscan
Visit 2: Assessment, Counselling, HBsAg test, Baseline test
Visit 3: Endoscopy, Ultrasound, HIV test, Family planning, HBV vaccine, Pregnancy test
Visit 4: D1 Consultation, D1 Dispensing, D1 Counselling
Visit 5: M1 dispensing, HBV vaccine
Visit 6: M2 dispensing
Visit 7: M3 Consultation, M3 Counselling, Blood test
Visit 8: SVR12 VL test, SVR disclosure, HBV vaccine
Rural Care Model* (next)

Visit 1
- RDT test
- POC VL test
- Assessment*
- Counselling
- HBsAg test
- HIV test
- Pregnancy test
- D1 Consultation
- D1 Dispensing

Visit 2
- M3 Consultation

Visit 3
- SVR12 VL test
- SVR disclosure

*Patients with complications, decompensation, HIV or HBV co-infected patients will not follow this path (evaluation at assessment)
NGO (hypothetical)

- HCV program in rural, resource-limited context
- Estimated total: 250,000 cases
- Program capacity: treat 25,000 patients
- Patients are very poor
Would your answers change?

- 5000 ultrasounds
- 2500 endoscopies
- 300 HCC diagnoses
- 1250 ligatures
- 5000 F4
- 25000 F0-F4 (7500 F4)

164,113 Life years saved
53,270 Life years saved
Lessons learned

• In many resource limited contexts, health systems do not have the capacity to support large scale treatment programs by managing a large volume of cirrhotic patients

• In trying to provide comprehensive care, we may be losing the opportunity to save lives
Lessons learned

Simplification is essential in delivering HCV treatment for patients in resource-limited contexts.

Quality can be maintained through simplification.
Cirrhosis management (Clinical approach)

HCV infection (Public health approach)
Michael LE PAIH
Meak THAN
Sharif ALAM
Nita CHHENG
Thoeun SO
Jean Philippe DOUSSET
Cecile BRUCKER
San KIMCHAMROEUN
Antharo KIEN
Muslim PEAS
Vithurneat HANG
Keoputhika UNN
Theresa Chan
Phalla SEK
Sreymom TOEUNG
Helen TINDALL
Sarom SAMRETH
Savorn CHOUP
Soeurn SIM
Sinet MAO
Chhorvivann SO
Leakheten PHAN
Somphors ORM
Samnang CHOR
Sokha VANN
Sotheara AY
Thida EM
Bora RON
Rasy SOL
Monineath VANN
Sirot OUM
Head of Mission (HOM)
Assistant of HOM
HR/Finance Coordinator
HR/Finance Manager
Cashier/Secretary
Medical Coordinator
Project Coordinator
Medical Activity Manager
Doctor 1
Doctor 2
Doctor 3
Doctor 4
Doctor - expat
Pharmacy Manager
Pharmacy Technician
Nurse Activity Manager
Translator
Nursing supervisor
Nurse / Counsellor
Nurse / Counsellor
Nurse / Counsellor
Nurse / Counsellor
Nurse / Counsellor
Community Mobilizer
Nurse
Nurse
Nurse
Receptionist
Receptionist
Receptionist
Phoeun LY
Sophal THEN
Aurelie CALZIA
Sokchea YAN
Dina NHIM
Sorphorn PIN
Chhiyean CHAO
Momoko IWAMOTO
Chhory SUN
Vanna ENG
Sothy HEM
Sothea SRENG
Suresh KIRUPAKARHAN
Haing LY
Kosal SOTH
Sokha KHEANG
Samorn SUENG
Yeth CHORNG
Chea MEN
Sanny CHHUN
Saroeun
Puthy
Narin
Phally CHHOM
Kanary MEAS
Suna BALKAN
Anne LOAREC
Camille FORTAS
Gregoire FALQ
Tonia MARQUARDT
Somyaly KOUN
Receptionist
Receptionist
Medical Secretary
Laboratory Manager
Laboratory Tech
Laboratory Tech
Laboratory Tech
Medical epi.
Research assistant
Data entry operator
Data entry operator
Data entry operator
Logistic Coordinator
Logistic Manager
Driver
Driver
Watchman
Watchman
Watchman
Watchman
Cleaner / Cook
Cleaner / Cook
Cleaner / Cook
Cleaner
Cleaner
HCVHIV referent, Paris
Data Manager Paris
Data Manager Paris
Deputy Program Man.

David MAMAN
Celine LASTRUCCI
Eric PUJO
Sok HEANG
Sok HEAN
Ny CHANTI
Chhit DIMANCHE
Bun SRENG
Or VANDINE
Eng HUOT
Laurent FERRADINI
Josephine WALKER
Nyasha MAFIRAKUREVA
Peter VICKERMAN
Francois ROUET
Janin NOUHIN

Medical Epi. Paris
Lab referent. Paris
Program Manager. Tokyo
Prof Kossamak Hosp
Prof Kossamak Hosp
Prof Kossamak Hosp
Chief Kossamak Hosp
Ministry of Health
Ministry of Health
Ministry of Health
WHO, Cambodia
Univ. of Bristol, UK
Univ. of Bristol, UK
Prof. Univ. of Bristol, UK
Pasteur Institute Cambodia
Pasteur Institute Cambodia

Funders:

Thank you
Comments?
Advice?
momoko.iwamoto@epicentre.msf.org