Country perspectives with Xpert MTB/RIF introduction CAMBODIA

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Outline

- Background
- Xpert use in Active Case Finding in two prison
- Xpert use in ACF among contacts
- Other Xpert use
- Lessons/Conclusion

1. Background

- First introduced in 2010 as part of a research project with Cambodian Health Committee (CHC)/Cepheid

- Currently, 10 Xpert MTB/RIF machines in the country (CHC:1, MSF:2, TB CARE I:2, TB REACH:4 (CENAT/NTP,IOM,Hope), CDC:1)

- Roll-out in the context of national lab plan:
  - coordinated by the NTP
  - consensus of the technical working group representing all partners (target population, algorithm, placement..)

Placement:

- Routine, In provincial referral hospitals with adequate workload, electricity supply and storage conditions
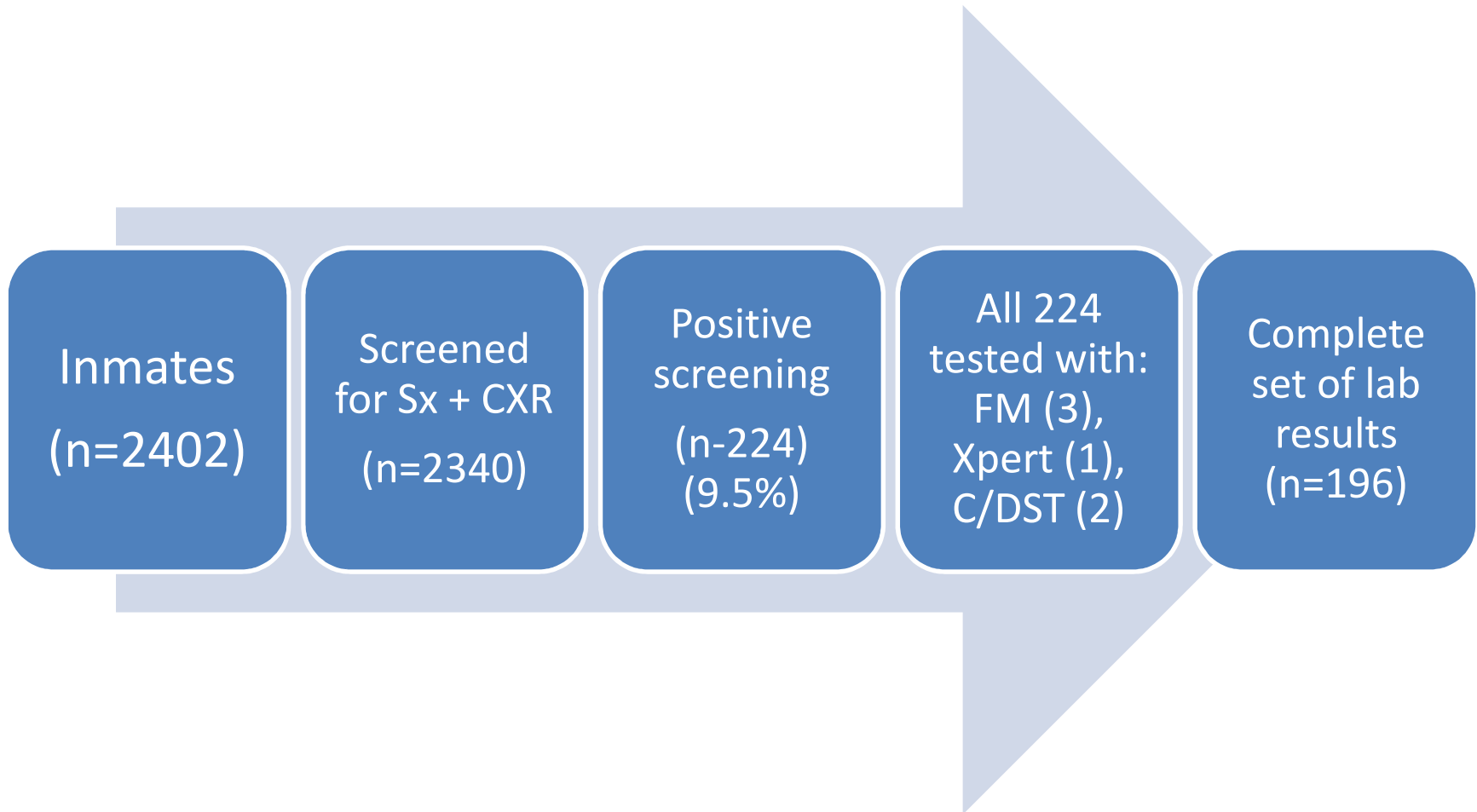- Mobile basis, for active case finding

Primary use:

- MDR-TB suspects: Confirmation with DST performed given the low prevalence of RIF resistance in Cambodia
- People living with HIV with TB symptoms
- For active case finding among other high risk groups (TB contacts, prisoners, migrants etc)

Experience with use of Xpert

- Active case finding (ACF)
  - Completed in two prisons (TB CARE I) in 2011
  - Just started among migrants, contacts and urban poor (TB REACH), started from February 2012
- MDR-TB suspects/ HIV positive TB suspects, started around mid 2011 from one province, now 3 provices(3/24).

2. ACF in two prisons: Process

Inmates
(n=2402)

Screened
for Sx + CXR
(n=2340)

Positive
screening
(n-224)
(9.5%)

All 224
tested with:
FM (3),
Xpert (1),
C/DST (2)

Complete
set of lab
results
(n=196)

ACF in prisons: Suspect characteristics

Enrolled prisoners	n=196*
Symptoms screen positive	63 (32.1%)
X-ray suggestive of TB	139 (70.9%

* Of these 34 were Bac+ and 23 Bac- cases

ACF in prisons: Xpert performance

Suspect criteria	Symptom screen positive and/or X-ray suggestive
Sensitivity Xpert - overall	40.6% (26/64) {28.6-52.6}
Sensitivity Xpert in sputum smear-positive	90% (9/10 {71.4-100}
Sensitivity Xpert in sputum smear-negative	31.5% (17/54) {19.1-43.9}
Suspect criteria	**Bacteriological negative**
Specificity *	95.5% (126/132) (91.3-98.7)

* Specificity: Excluding 2 symptoms positive and 2 X-ray abnormal cases increased specificity to 98.4% (126/128) [95%CI: 96.2-100].

ACF in prisons: Xpert performance

- Positive Xpert associated with presence of any TB symptom (56%) compared to no symptoms (37%)

- Xpert detected more cases in the group of patients with cough > 2 weeks (63%), compared to shorter or no cough (36%)

- However number of cases is very small to allow definite conclusion
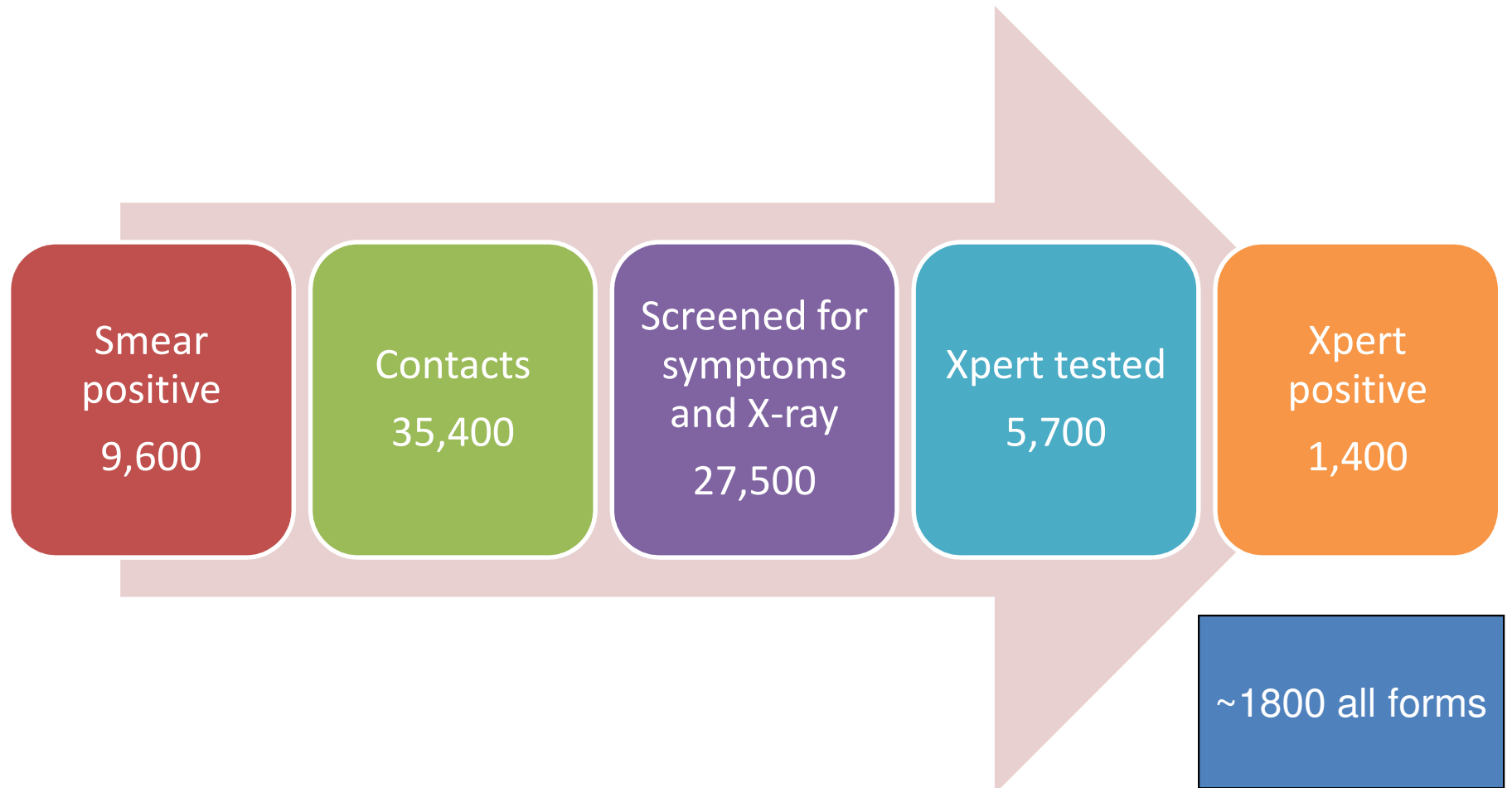
ACF: Evaluation by lab expert on low Xpert sensitivity

- Xpert set up and routine practices: excellent
- Culture facilities: high standard but lab cross contamination cannot be ruled out
- Xpert and culture performed on different samples, collection of samples 2 and 3 not supervised. Confusion of samples among prisoners cannot be excluded

- Suspect selection may have influenced Xpert performance: more case were found among those with any symptoms, and with prolonged cough
- High error rate: 7.4% (18/243)
  – Reduced to 4.5% if errors caused by wrong installation excluded (to do with mobile use)

3. ACF among contacts : CENAT/TBREACH
Assumptions for 15 Operational Districts

Smear positive
9,600

Contacts
35,400

Screened for symptoms and X-ray
27,500

Xpert tested
5,700

Xpert positive
1,400

~1800 all forms

ACF among contacts:CENAT/TBREACH Preliminary results after <u>four</u> Districts

Parameters	Target (%)	Achieved (%)
Participation	5,238 (100)	6,403 (122)
X-ray screening	5,081 (100)	6,403 (126)
Xpert testing	1,048 (100)	752 (72)
Bacteriological positive (Gx+)	262 (100)	162 (62)
All forms of TB cases	345 (100)	323 (94)
% B+ among participants	(5.0)	(2.4)
% all forms among partic.	(6.9)	(4.8)

Preliminary data on Xpert tests *

Total tests	MTB+ RIF-	MTB+ RIF+	MTB- RIF-	MTB+ RIF Ind.	Invalid, Error
757	159 (21%)	1 (0.1%)	545 (72%)	2 (0.2%)	50 (6.6%)

*Data is from **six** weeks of Xpert-based active case finding among contacts*

4. Other routine use of Xpert
(Oct 2011 - Feb 2012)

Suspect category	2011 (Oct-Dec)	2012 (Jan-Feb)	Total
Failure	4	6	10
Non-converter at month 3	1	5	6
Relapse	22	56	78
MDR-TB close contact	0	7	7
Return after default	3	0	3
HIV positive TB suspects	3	12	15
Others	2	13	15
Unknown	0	23	23
Total	35	122	157

Other use: Xpert performance
C/DST available for 35 tests in 2011

Performance TB case detection	
Sensitivity overall	97.1% (34/35) {91.5-100}
Sensitivity in smear-positive	100% (30/30)
Sensitivity in smear-negative	80% (4/5) {44.9-100}
Performance RIF resistance detection	
Sensitivity	100% (6/6)
Specificity	100% (18/18)

5. Lessons learnt/Conclusion

- Xpert implementation less than one year, too young
- Need for coordination among partners and roll out under a national lab plan
- Currently, no plan to decentralize placement beyond referral hospitals - given criteria for selection of sites (workload, infrastructure) and target population for Xpert test
- Xpert particular useful for active case finding given ease of transportation
  - However, UPS lasts only 2 hours (needs to be complemented with battery), workload:overburden
  - High error rates (7.4% in ACF among prisoners, 6.6% during ACF among contacts)

- Routine services: clear algorithm for referral of specimen and diagnosis with other diagnostic tests (C/DST, LPA,…), , service marketing, actvie involvement and motivation from implementers/other partners (TB and HIV program workers,..): important

- Rapid result→ benefit early treatment, esp MDR-TB and TB/HIV

- Low sensitivity of Xpert for ACF in prisons needs further investigation

- Good performance for MDR –TB diagnosis: 100% concordance between Xpert and DST (sample:small)

- Technical assistance for detailed analysis and evaluation of pilot was very useful

- How to fit Gx+ cases in the NTP report? We (NTP) decide to put in Sm+/bact +
- Xpert Expansion(routine) requires good/careful planning and thinking ,esp for maintenance and logistical sustainability (annual calibration, high prices and short shelf life of cartridge ,…), HW capacity building etc.
- Plan to scale up to 50 hospitals by 2015 in under review. Resources? GF round 11 cancelled….
- Resource mobilization for scale up.

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Thank you Very Much