AIDS EPIDEMIC MODELLING (AEM-2017) WORKSHOPS for PAKISTAN

Development of Intervention and Impact Analysis Models

3-7 April, 2017

Lahore

Dr. Saima Paracha
Program Officer
NACP

AIDS EPIDEMIC MODELLING WORK (AEM)

Dates and Venue:

The training-workshop was conducted on 3-7 April, 2017 at Avari Hotel, Lahore. The training team, facilitators and participants arrived at the venue a day before.

Facilitators:

The three member team comprised of

i. Dr. Ye Yu Shwe (Data Analyst, RST)
ii. Dr. Khin Cho Win Htin (Data Analyst, RST)
iii. Ms. Nguyen Thu Anh

Agenda:

Separate agenda items were prepared for each day of the workshop.
Attached as Annex-1

Participants:

S.No	Participants	Organization
1.	Dr. Quaid Saeed	NACP
2.	Dr. Safdar Kamal Pasha	NACP
3.	Dr.Sofia Furqan	NACP
4.	Dr. Saima Paracha	NACP
5.	Mr. Agha Sheraz	NACP
6.	Mr. Fahad Hafeez	NACP
7.	Mr. M. Mudassar	NACP
8.	Dr. Rajwal Khan	UNAIDS
9.	Dr. Nasir Sarfraz	UNICEF
10.	Dr. Daud Achakzai	BACP
11.	Dr. Aftab Ahmed	SACP
12.	Dr. Bilal Saleem Khan	PACP
13.	Mr. Haseeb Ahsan	PACP
14.	Mr. Salman Qureshi	Nai Zindagi
15.	Mr. Graham Smith	International Consultant (GF-FR)
16.	Dr. Shahzad Ali Khan	National Consultant (GF-FR)

Objectives of the AEM Workshop:

The workshop objectives are to:

i. Explore the impact of alternative intervention packages on the future of the epidemic.
ii. Compare these packages in terms of key policy variables such as infections averted, total deaths averted and relative costs.
iii. Construct Intervention and Impact Analysis Scenarios based on agreed coverage and intervention packages.

iv. Four intervention scenarios namely **a)** business as usual **b)** high impact with OST **c)** high impact without OST) and **d)** fast track will be developed and consensus developed on the most appropriate model for implementation

v. Discuss way forward to translate the workshop outputs into actions.

Outcome of the AEM Workshop:

The outcome of the Intervention and Impact Analysis is to build an HIV baseline model, intervention scenarios, and impact assessment that can be used as advocacy tools to inform and advocate stakeholders and policy makers on costs of action and costs of inaction.

Recap: AEM-1(Baseline Models) Workshop (20-24 March, 2017-Bhurban)

In the first AEM workshop the participants developed "Four Baseline Models" in which data received from the IBBS Round-5 (2016) and Country Team Consensus obtained on data triangulated by the technical consultants was incorporated. The following models were developed:

i) Pakistan National Baseline Model-2017

ii) Punjab Sub-National Baseline Model-2017

iii) Sindh Sub-National Baseline Model-2017

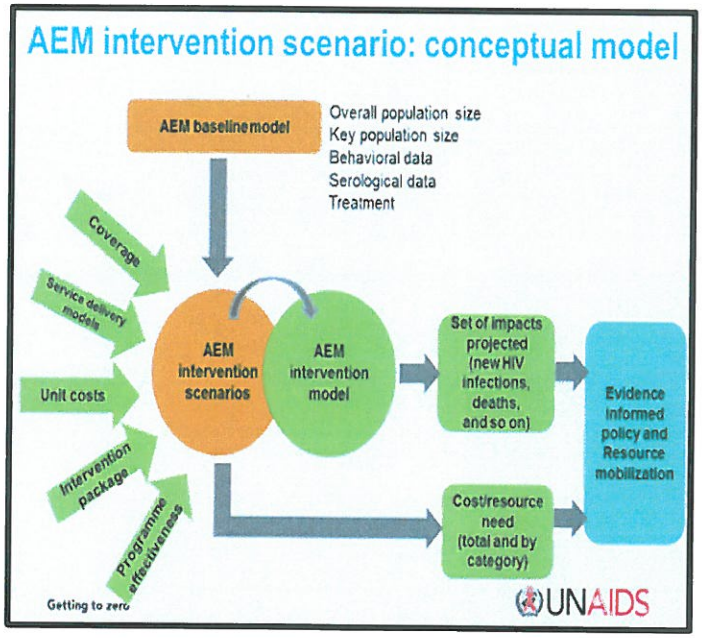
iv) KP-Balochistan Sub-National Baseline Model-2017

Key Outputs	Key Population Estimates			
	National	Punjab	Sindh	KP & Balochistan
Current PLHIV	128,480	63,671	54,891	9,919
New HIV Infections	18,504	9,199	7,550	1,756
Annual AIDS Deaths	7,876	3,914	3,680	282
Annual ART Needs	82,222	40,544	35,235	6,433
Number on ART	7,569	3,059	2,188	2,322

** AEM (PSE-2016)*

Introduction:

AEM is a behavioral model that makes use of a battery of transmission data and behavior inputs to generate population size estimates and disease trends for use in designing "evidence based focused targeted high impact interventions" for HIV AIDS. He explained the process of calculating new infections, exploration of impacts and costs of various/alternate programmer scenarios to address the concentrated HIV epidemic, and then further compare these scenarios for effective and robust policy making.



AEM workbooks are excel sheets that record the available epidemiological, behavior and population size information needed to run AEM. Appropriate assumptions based on past trends, scientific evidence and consensus of the Country team are made, and adjustments in the transmission probabilities and cofactors are made to fit observed historical trends in the epidemic. The AEM model is RUN by applying the numerical results based on inputs including HIV incidence, prevalence, AIDS death, ART numbers and needs, transmission modes and other key data inputs. The AEM model then generates RESULTS which give input based populations size estimates, new infections, annual AIDS deaths, annual ART needs, male-female incidence ratio etc. as well as other valuable information required for strategic planning, policy making and programmer implementation.

Following the development of baseline models a review of the key indicators of impact, and assessment of available program data for program coverage, unit cost of interventions for all key populations (KP), program effectiveness as per the country/region specific best practices as well as the service delivery models using the obtained goal projections is undertaken. The work is aimed at giving direction to the program implementation process for continuation at the national level as an essential input to national strategic planning, national program evaluation, resource mobilization and enhancement of program impacts. The key output of the exercise will be preliminary impact assessments.

i) Summary Day-1

The workshop commenced with recitation from the Holy Quran followed by a formal round of introductions. Dr. Quaid Saeed, Senior Project Coordinator, NACP welcomed the participants to second National AEM Workshop. Dr. Ye Yu Shwe (Data Analyst, RST) facilitated the initial discussion on the national and provincial scenarios. He gave a quick recap of the National and Sub-National Baseline Models developed earlier in Bhurban and explained the next steps towards development of the intervention and impact analysis workbooks. This information can be used for developing and updating National Strategic Plans, Global Fund Funding Request proposals and advocacy for resource mobilization.

The group decided to develop four intervention workbooks namely i) Punjab ii) Sindh iii) KP-Balochistan and iv) National Intervention Workbook. Four scenarios i) Business as Usual ii) High Impact with OST iii) High Impact without OST and iv) Fast Track would be constructed based on the inputs agreed by the Country team. With reference to the different KPs the group agreed to triangulate the IBBS data and KP specific programmatic data for deciding the best practices for the respective communities.

In the next session the group held detailed discussions to define program coverage indicators and best practices by key populations and provinces. Key population representatives were also invited to the second AEM workshop to share their project implementation experiences and community needs, issues and challenges. Intervention packages for each specific key population were discussed, defined and agreed upon. The discussion on best practices revolved around the following key areas:

- Details on the prevalence, distribution, trends and evolution of the epidemic over time in the country
- Information on maximum coverage, components of coverage, effectiveness and costs of prevention and care responses in the target populations
- Behaviour trends (both risk and preventive behaviours) overtime in various key populations affected by the epidemic
- Policy environment, game changers and key influences in shaping the national HIV response

Program coverage is defined as the percent population reached, effectiveness is defined in terms of level of behavior change achieved at "full" coverage and unit cost is the cost per person to implement the best practice package. The best services package agreed upon for the Key Populations revolved around the following key areas that were to be fine-tuned over the course of the workshop:

- Sex Workers (FSW, MSW, TG-SW, MSMS)
    - Received a free condom in the past 12 months
    - Tested for HIV in the past 12 months
    - Outreach & commodity
- PWID
    - Received a new needle and syringe in the past 12 months
    - Received a free condom in the past 12 months
    - Tested for HIV in the past 12 months
    - Outreach & commodity

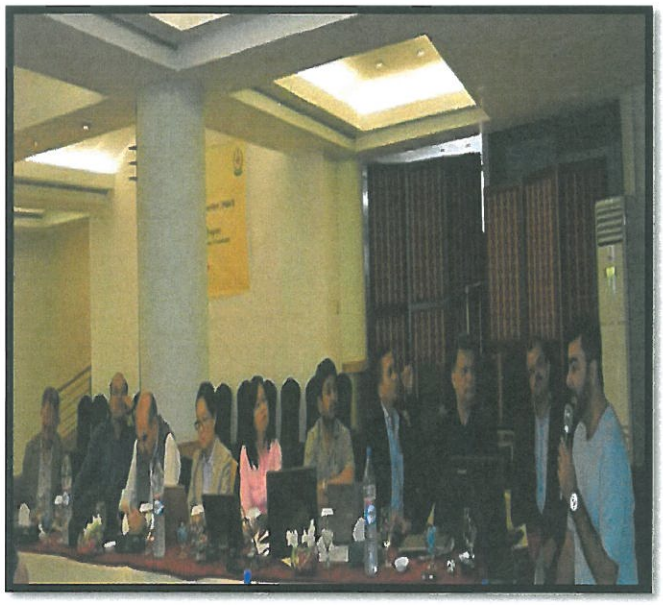
The essential variables for development of the scenarios included i) target setting ii) unit cost and iii) programme effectiveness parameters. Target setting was determined on the basis of current programme coverage and key population specific interventions. Unit cost calculations were based

on the intensity, scale, and component of interventions. Unit cost per best practice/intervention for specific key populations per province was agreed upon. Programme effectiveness parameters were adjusted for each intervention package based on available data and inputs from the country team. The key inputs for the baseline intervention workbooks were recorded and entered into the relevant workbooks.

ii) Summary Day-2

On day-2 the group was joined by the following participants:

Participants	Organization
Dr. Sofia Furqan	NACP
Ms. Joumana Hermez	WHO/EMRO
Mr. Tanzil-ur-Rehman	Dostana



Mr. Tanzil-ur-Rehman, Program Manager, Dostana gave a detailed presentation on different projects being implemented for MSW/MSM, the key components, scale and scope of the service delivery packages, challenges, gaps and difficulties in project implementation. The session was highly interactive and participatory. The group and technical experts discussed and sought clarity on a number of key variables and behaviours.

Ms. Nguyen Thu Anh gave a presentation on the data inputs discussed and agreed on the day before. The group continued discussions on the baseline program coverage to triangulate and finalize the unit costs for the fast track scenario. The group agreed that fast track scenario would include focused targeted high impact interventions for selected fast track cities.

Ms. Nguyen Thu Anh facilitated the session on unit costs and discussed with the group the assumptions (based country team consensus) and results of triangulation and adjustments of unit cost and components of intervention by key populations for all the provinces for use in the intervention scenarios. The following table (baseline) was finalized as a result (based on AEM):

Provinces	Cost in USD inclusive of management cost (20% of the total unit cost)				
	PWID	FSW	MSW (to be used for MSM-1 & MSM-2)	HSW	Adult treatment
Punjab	193	92	92	92	217 (Punjab, KPK & Balochistan) 202 (Sindh)
Sindh	193	62	69	69	
KPK & Balochistan	197.5	97.5	107.5	107.5	

The intervention scenarios to be developed were discussed in detail by the country team and various aspects were analyzed in the light of available resources and the prevailing policy-political environment. The country team agreed to take forward the ***"High impact without OST intervention scenario"*** for future implementation and use in the Global Fund-New Funding Request proposal.

iii) Summary Day-3

The group was joined by the following participants on the third day.

S.No	Participants	Organization
1.	Dr. Ayub Rose	KP
2.	Dr. Agnes Dzokoto	Global Fund
3.	Ms. Irum Shahzadi	Contact
4.	Mr. Tanzil-ur-Rehman	Dostana
5.	Dr. Tayyaba Rashid	PACP
6.	Mr. Khurshand Bayor Akhter	DMHS

Mr. Graham Smith, the International Consultant for the Global Fund Funding Request (2018-2020) presented his data sheet to group to get consensus. It was suggested by the group that high impact cities should be prioritized on the basis population size estimates and HIV prevalence with reference to the specific key populations.

Ms. Irum Shahzadi gave a detailed presentation on the female sex delivery programs and service delivery mechanisms. She shared the different typologies of FSWs operating, she shared the different services being provided to the FSWs through their DISH-centres that include condoms provision, STIs treatment, counseling etc. This was again a very interactive and highly knowledgeable. The participants, consultants and the data analysts (RST) asked various questions regarding the protective and preventive measures taken by the FSWs, HIV testing in FSW, STI diagnosis, as well as their education and awareness. The role of Peer Educators was considered instrumental in establishing networks and close linkages with the FSWs.

The country team noted that the HIV epidemic burden across each of 106 cities in Pakistan varied with respect to prevalence, epidemic trends, behaviours and key populations. The group thus, decided to adopt the approach of giving high priority to key populations and cities with a high burden of HIV to achieve high impact with cost effective interventions. Targets for each province were set based estimated number of PLHIV for each key population (data sources: IBBS2014/2016 and provincial AEM baseline workbooks). Cities with the highest number of PLHIV among each key population were then taken into account to reach the set targets.

Province	High priority cities (Key Population wise)			
	FSW	PWID	HSW	MSW
Punjab	4 (Lahore, Sheikhupura, Faisalabad & Multan)	19 (Faisalabad, Lahore, Gujranwala, Sialkot, Bahawalpur, Sargodha, Muzafargarh, Mandi Bahauddin, Mianwali, Kasur, Sheikhupura, Multan, Jhang, DG Khan, Rawalpindi, Lodhran, Okara, Toba Tek Singh & Khanewal)	13 (Multan, Faisalabad, Rahim Yar Khan, Lahore, Rawalpindi, Sargodha, Muzafargarh, Bahawalpur, Mandi Bahauddin, Okara, Mianwali, Gujranwala & Sheikhupura)	12 (Lahore, Sargodha, Rahim Yar Khan, Rawalpindi, Kasur, Multan, Muzafargarh, Sheikhupura, Mandi Bahauddin, Okara, Bahawalpur & Faisalabad)
Sindh	5 (Karachi, Sukkur, Larkana, Hyderabad & Nawabshah)	4 ((Karachi, Jacobabad, Hyderabad & Larkana)	5 (Karachi, Larkana, Jacobabad, Dadu & Badin)	4 (Karachi, Hyderabad, Larkana & Nawabshah)
KPK	2 (Peshawar & Haripur)	3 (Peshawar, Mardan & Swat)	2 (Peshawar & Haripur)	4 (Peshawar, Bannu, Mardan & Haripur)
Balochistan	1 (Quetta)	2 (Quetta & Kech/Turbat)	1 (Quetta)	1 (Quetta)
Total	12	28	21	21

The group agreed that due to limited resources the above number of cities in each province would be given priority for rapid increase of prevention coverage. In non-selected cities, prevention coverage will remain at the same level, or gradually increase to 30%.

The country team based on the programme implementation experiences and achievements of different SDPs as shared by representatives from NGOs (PWID, MSW, HSW, and FSW), programmatic data, country team discussions agreed on the following intervention packages for each KP.

Key Population Specific Intervention Packages

Intervention Package for PWID

- NSEP Services: Provision of new syringes, needles, band-aids and alcohol swabs; collection of used syringes and needles; provision of condoms; provision of hygiene services; behavior change communication messages on HIV, safe sexual practices, safe injecting practices and STIs
- HIV Testing & Counseling for PWID and spouse.
- Spouse Prevention Program: Provision of condoms, counseling on HIV and safer sexual practices, provision of living support package, referral to PPTCT centers.
- Referral to ART and adherence support.
- STI diagnosis and treatment.
- Paramedic and Basic Medical Care: Antiseptic dressing for wounds and abscesses,
- Referral to private medical practitioners for basic medical care.
- ART Adherence Unit: Residential care for 8 weeks for detoxification, Initiation and maintenance on ART and adherence support.

Intervention Package for MSW

- Behavioral change communication through outreach (includes Condom & Lubes, IEC material)
- Drop In Center facility (for repeat BCC /Psycho social support & Counselling)
- VCCT with pre & post counselling & psychological counselling (community-based HIV testing)
- STI diagnosis & Treatment
- Referral support to PLHIV clients with strong follow-up
- Condoms & lubes distribution
- Career counselling and family counselling in DIC

Intervention Package for HSW

- BCC - Behavioral change communication through outreach (includes Condom & Lubes, IEC material)
- Drop In Center facility (for repeat BCC /Psycho social support & Counselling)
- VCCT with pre & post counselling & psychological counselling (community-based HIV testing)
- STI diagnosis & Treatment
- Referral support to PLHIV clients with strong follow-up
- Condoms & lubes distribution
- Career counselling and family counselling in DIC

Intervention Package for FSW

- Establishment of Drop-In Centers (DIC) to deliver services to FSWs;
  - Screening/testing of HIV, Hep-B, Hep-C, Syphilis and PAP Smear
  - Vaccination of Hep-B in case of non-reactive;
  - Syndromic Management of STIs;
  - Ensuring confidentiality, collection of client data and issuance of vaccination cards to clients for access to services
- Community based outreach through peer educators for behavior change;
- Establish condom distribution network to enhance safe sex practices
- Promotion of an enabling environment in the project area;
- Registration of FSWs through bio-metric registration system developed by PACP.

Treatment

- Treat all from 2018 with a phased approach (starting from select high priority cities/districts)
- ARV
- One CD4 count test at ART initiation
- Annual viral load test
- OI diagnosis and prophylaxis (cotrimoxazole and INH)
- Link to care and adherence support

iv) Summary Day-4

On day four the group was joined by the following participants.

S.No	Participants	Organization
1.	Dr. Sabeen Afzal	MoNHSR&C
2.	Dr. Ayub Rose	KP
3.	Dr. Werner Beuhler	Global Fund
4.	Dr. Agnes Dzokoto	Global Fund
5.	Dr. Amir Chaudhry	LFA
6.	Mr. Asghar Satti	APLHIV
7.	Ms. Joumana Hermez	WHO/EMRO
8.	Mr. Tanzeel-ur-Rehman	Dostana
9.	Dr. Tayyaba Rashid	PACP
10.	Dr. Arshad Altaf	National Consultant (GF-FR)

Based on the Country team consensus on various coverage indicators and calculations performed by the Data Analysts team, intervention and impact analysis scenario worksheets were developed and shared with the group. The scenarios are

i) Baseline Scenario-Business as Usual
ii) High-impact with OST
iii) High-impact without OST &
iv) Fast- track Scenario

The group held in-depth discussions on the results. The HIV epidemic was viewed with an analytic lens factoring in the socio-cultural influences, key population behavior trends, their approach to service utilization and coverage of service delivery packages, poverty, illiteracy and other social determinants, resource constraints, and lack of enabling environment and effective legislation. The country team agreed to adopt the ***"High impact without OST scenario"*** for its future programming.

The results of the essential variables for the "High impact without OST scenario" are described below:

i) Target setting

- Selection of high priority cities with a high burden of HIV for implementation of intensive interventions. Cities with lower burden of HIV will be provided with interventions at maintenance or gradually increased levels.
- Coverage was set up for 2021 (as of the timeline of national strategic plan) and 2030.
- Treatment targets between the years 2016-2021 were calculated based on estimated number of KP infected with HIV who would be reached by prevention intervention, including HIV testing, and received ART among all KP infected with HIV in 2021 from AEM baseline. (Treatment for all would be implemented in a phased approach).

Coverage for each KP and for treatment in both priority and maintenance cities, by year:

	2016 (baseline)	2017	2018	2019	2020	2021	2030
Punjab							
FSW	10.5%	18%	25%	32%	40%	47%	70%
PWID	30%	38%	46%	54%	62%	70%	80%
MSW	13.6%	25%	36%	47%	59%	70%	80%
MSM clients	4.5%	18%	31%	44%	57%	70%	80%
Non-paying MSM	1.5%	8%	14%	20%	27%	33%	70%
HSW	16.9%	27%	38%	49%	59%	70%	80%
Treatment	8.1%	18%	27%	37%	46%	56%	80%
Sindh							
FSW	5.6%	16%	26%	36%	46%	56%	70%
PWID	18%	24%	30%	36%	42%	48%	80%
MSW	20.9%	29%	37%	44%	52%	60%	80%
MSM clients	7%	18%	28%	39%	49%	60%	80%
Non-paying MSM	2.3%	14%	25%	37%	48%	60%	70%
HSW	22.2%	29%	35%	42%	48%	55%	80%
Treatment	6.6%	13%	20%	27%	34%	41%	80%
KPK and Balochistan							
FSW	1%	11%	21%	30%	40%	50%	70%
PWID	2.5%	12%	21%	31%	40%	50%	70%
MSW	1.5%	11%	21%	31%	40%	50%	70%
MSM clients	0.5%	10.4%	20.3%	30.2%	40.1%	50%	70%
Non-paying MSM	0.17%	2.1%	4.1%	6.1%	8.0%	10%	10%
HSW	1.2%	11%	21%	30%	40%	50%	70%
Treatment	36%	39%	39%	39%	40%	41%	70%

ii) Unit Cost

- Unit cost for PWID high impact scenario was taken from the actual unit cost of the PWID-intervention best practice in the country provided by Nai Zindagi Trust.

- Unit cost for MSW/HSW was taken from the MSW/HSW-intervention best practices conducted by Dostana organization to which cost for testing, commodity, IEC and STI management was added.
- Fast-track unit cost for FSW was used due to lack country FSW-intervention best practice unit cost.
- ART unit cost was taken from the business as usual scenario excluding CD4 count test (keeping the one time initial CD4 test only), and adding cost for link to care and adherence support.

Unit cost for each KP in USD:

Key Population	Unit Cost (USD)
FSW	131.1
PWID (NEP)	218
MSW and MSM	71.6
HSW	71.6
Treatment	247

iii) Effectiveness parameters (behavior change and STI reduction)

Behaviour change and STI reduction as impact of interventions (with appropriate adjustments) were based on the following assumptions:

a. **FSW →** Experience shared by Contech International and consensus with TWG
b. **PWID →** IBBS results in Karachi where the best practice PWID intervention was conducted.
c. **MSW/HSW →** M&E system from Dostana
d. **ART-related infectivity reduction →** Apply AEM modelling built-in parameters

Assumptions for effective parameter of High Impact Scenario

Program	Change in Behavior
NSEP	Percent IDUs sharing: - Punjab: Baseline → 16.6% - Sindh: Baseline → 17.1% - KP & Balochistan: Baseline → 21.9%
	Percent injections shared: 50% → 30%
	Number of injection per day: 2.7 → 2
FSW	- Condom use w/Clients: Baseline → 80% - Condom use w/IDU: Baseline → 80% - Condom use w/MSM: Baseline → 80%
	STI prevalence: Reduced by 0.37 times from baseline

MSM	STI Prevalence: - MSM clients: Reduced from 2.5% to 1.5% (Punjab), 9.5% to 4% (Sindh), 2% to 1% (KP & Balochistan) - Non-paying MSM: Reduced by 0.84 times of baseline (Punjab), from 2.5% to 1.5% (Sindh), 0.5% to 0.3% (KP & Balochistan) - MSW: Reduced from 10% to 4% (Punjab), from 15% to 5% (Sindh), 7% to 2% (KP & Balochistan)
	Condom Use: Increased by 2.43 times of baseline or 85%
	Frequency of Anal Sex: Reduce by 0.87 times of baseline
TGSW	Frequency of Anal Sex: no change
	Condom Use: Baseline → 80% - 85%
	STI Prevalence: Reduced from 9.8% to 4% (Punjab), 12.2% to 5% (Sindh), 9.2% to 3% (KP & Balochistan)
ART-related infectivity reduction	90%, Treat all from 2018

v) Summary Day-5

S.No	Participants	Organization
1.	Dr. Sabeen Afzal	MoNHSR&C
2.	Dr. Mamadou L Sakho	UNAIDS
3.	Dr. Ayub Rose	KP
4.	Dr. Agnes Dzokoto	Global Fund
5.	Mr. Asghar Satti	APLHIV
6.	Ms. Joumana Hermez	WHO/EMRO
7.	Mr. Tanzeel-ur-Rehman	Dostana
8.	Dr. Arshad Altaf	National Consultant (GF-FR)
9.	Dr. Younis Chacahar	SACP
10.	Mr. Masood Fareed	UNAIDS

The Data Analyst team (RST) shared and gave a detailed presentation on "Intervention and Impact Analysis Models (final)". They informed the group that based on the four baseline models earlier developed twenty intervention and impact analysis scenarios were constructed, run and results obtained. Country Team Consensus was obtained on the work done and results obtained. Although the impact of the Fast track approach was found impressive but in the country context the Country Team felt that adopting the ***"Pakistan High-Impact-NSP without OST scenario"*** would be more realistic, implementable and practical. OST is a challenge that the country and program will have to address and take up with appropriate quarters.

Dr. Ye Yu explained the intervention and impact analysis scenarios in detail in terms of interpreting the resource needs, impacts and return on investment for each of the baseline models. The results both tabular and graphic for each scenario for each key population were explained. As the National strategies are developed for 5 years, all scenarios were displayed with a 2016-2021 timeframe. The resource needs and cost effectiveness analyses (prevention cost per infection averted & cost per DALYs saved) as well as the epidemiological impacts (total HIV infections averted, AIDS deaths averted among those on ART & total DALYs saved) were shared with participants.

Dr. Mamadou L. Sakho UNAIDS Country Director for Pakistan expressed his pleasure to be a part of the AEM exercise and hoped that it would be a positive contribution to the Global Fund Funding Request proposal for Pakistan (2018-2020). He said that the fight against HIV AIDS is an arduous challenge that needs concerted efforts, commitment and perseverance to make inroads and achieve success.

He thanked the Data Hub team for their time and efforts in successfully conducting the AEM exercises in Pakistan. He believed that the outputs of the AEM exercise would strengthen the HIV response in the country based on ***"evidence based-focused targeted high impact interventions"*** to curb and curtail the spread of HIV epidemic, reduce the number of new infections, avert the number of deaths and improve the quality of life of people infected and affected by HIV. He acknowledged and appreciated the active and participatory role played by the Country team in the successful completion

of the AEM workshops. The IBBS-Round-5 (2016) is key milestone that has contributed to the HIV data library providing policy makers, programmers and planners with up-to-date data to redefine and strengthen their HIV response.

He further said that the AEM exercise has intelligently made use of the recently generated epidemiological evidence to give reliable population size estimates and projections, set realistic targets, develop high-impact interventions scenarios based on country specific best practices to design a cost-effective and targeted service delivery model. He wished the country success and assured the Government of Pakistan and the National and Provincial Programs of UNAIDS support in the fight against HIV to meet the National and Global targets. He thanked the Ministry of National Health Services, Regulation and Coordination for its support, leadership and ownership to the AEM exercise.

Dr. Nasir Sarfraz, UNICEF said that UNICEF is committed to reducing the Prevention from Parent to Child Transmission (PPTCT) in Pakistan and would like to see the numbers obtained from the AEM-Spectrum exercise to be translated into actions in terms of impacts. He believed that PPTCT is an essential pillar of the HIV response and would surely contribute to the control of HIV transmission in a susceptible and vulnerable group of the population.

Dr. Sofia, SPO, NACP said that NACP is proud to have successfully completed the AEM exercises. She thanked the Data Hub team for its patience and hard work in completing the tedious task of developing the baseline and impact analysis worksheets. She appreciated the efforts and valuable inputs of the country team including technical experts, provincial AIDS control programmes and the panel of consultants working on developing the Global Fund-New Funding request proposal. She also thanked the UNAIDS Country office and UN partners for their patronage and support to the national HIV response. She concluded by saying that the time for action has come. Countries have to gear up to tackle the HIV epidemic with judicious use of resources, intelligent strategic planning and robust surveillance, monitoring and evaluation systems to increase HIV testing, increase ART registration and increase deterrence to risky behaviours.

Conclusion:

The AEM Workshop concluded with a note of thanks to all the participants for their valuable inputs and active participation in achieving the expected outputs from the workshop. UNAIDS and NACP offered special thanks and appreciation to key population and community representatives for their active participation and valuable inputs in understanding the KP-specific dynamics, defining population/community needs specific prevention packages, setting realistic targets and providing important information for the development of intervention scenarios.

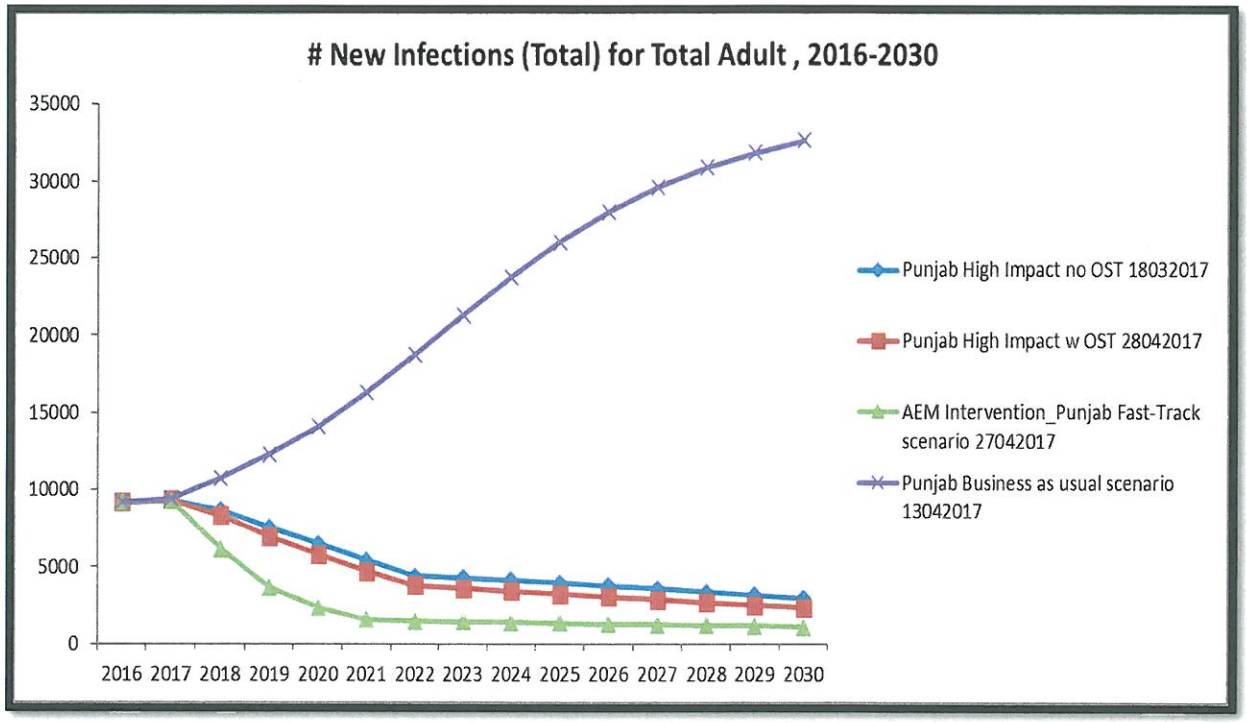
Key Outputs of the Training Workshop:

Four intervention scenarios were developed incorporating the data received from the IBBS Round-5 (2016), AEM baseline workbooks and Country Team Consensus. The following scenarios were developed:

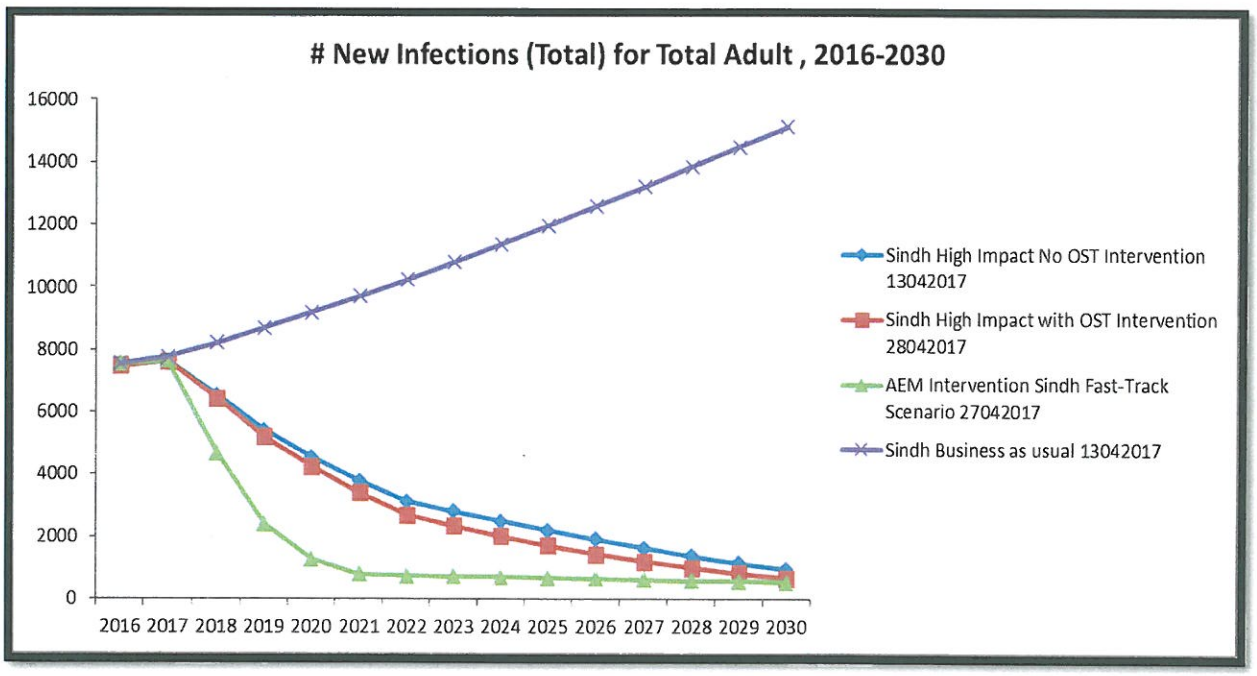
a. Business as Usual Scenario
b. High Impact with OST Scenario
c. High Impact without OST Scenario and
d. Fast Track Scenario

Comparison of Four Policy Scenarios:

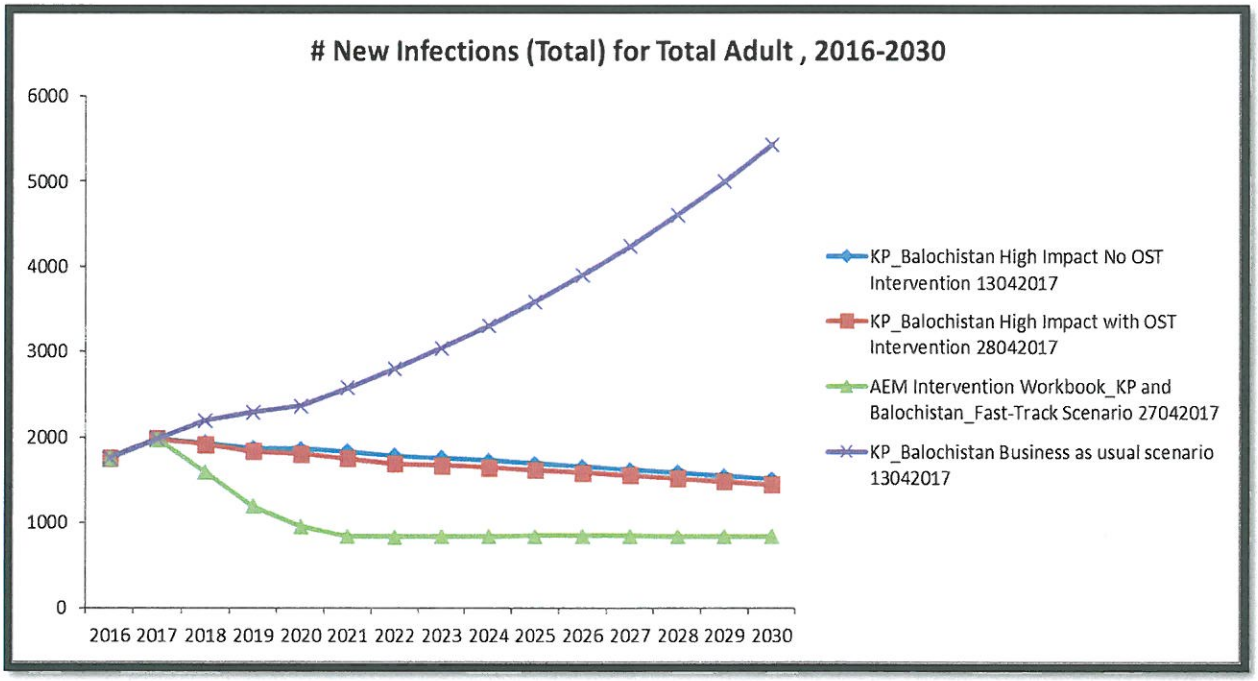
a) **Punjab**



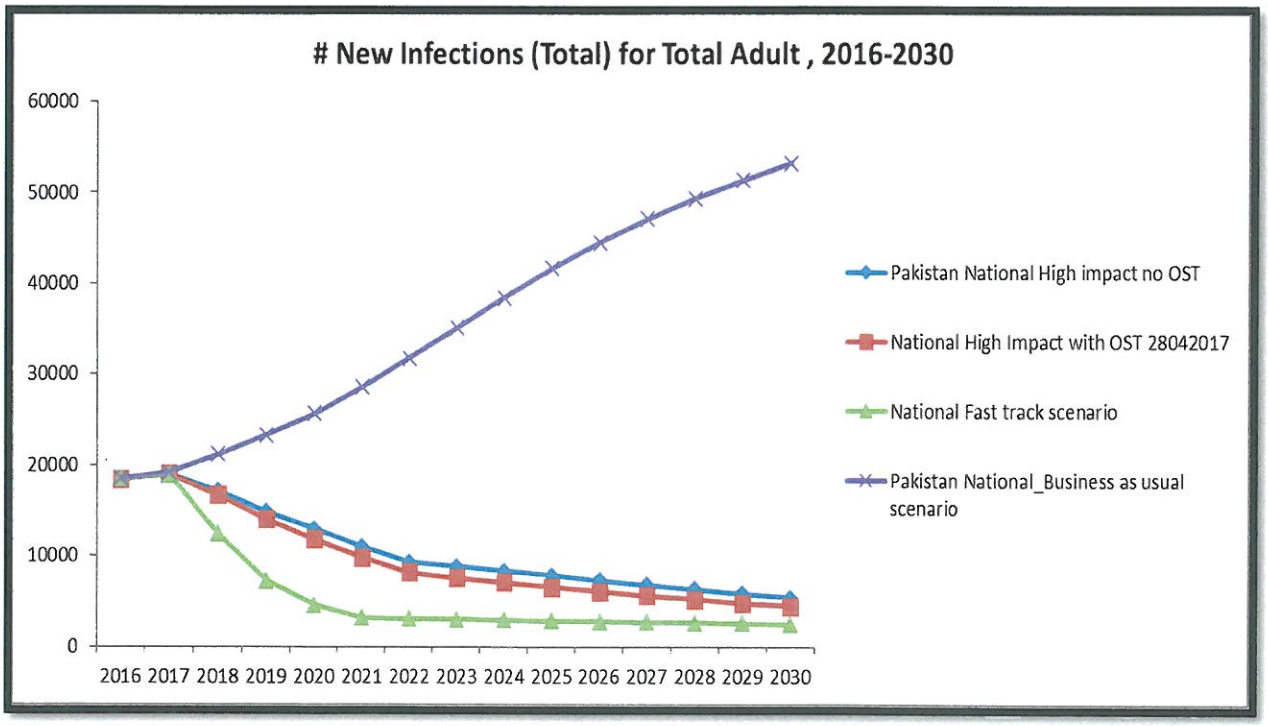
b) **Sindh**



c) KP-Balochistan



d) Pakistan... National



Way Forward → Country Approach (Pakistan 2016-2021)

The country team decided that it would follow the "***High Impact no OST Intervention Scenario***" from 2016-2021. The table below explains the Total resources, # of DALY saved, cost per DALY saved in case of the High Impact no OST Intervention Scenario for Pakistan (2016-2021).

	Punjab	Sindh	KP-Balochistan	Pakistan-National
Resource Needs Required:				
Prevention Cost (thousands)	$94,906	$92,409	$19,825	$207,140
Treatment Cost (thousands)	$31,968	$19,067	$7,217	$58,251
Prevention Cost (thousands, discounted)	$83,711	$81,201	$17,290	$182,202
Treatment Cost (thousands, discounted)	$27,875	$16,658	$6,400	$50,933
Epidemiological Outcomes:				
Cumulative new HIV infections	46,694	35,407	11,240	93,341
Cumulative AIDS-related deaths	19,057	19,272	2,164	40,493
Marginal Resources Required:				
Additional Prevention Cost (thousands)	$63,310	$77,924	$18,970	$160,204
Additional Treatment Cost (thousands)	$24,764	$15,705	$1,373	$41,842
Additional Prevention Cost (thousands, discounted)	$55,223	$68,142	$16,520	$139,885
Additional Treatment Cost (thousands, discounted)	$21,489	$13,643	$1,229	
Epidemiological Impacts				
Total HIV Infections Averted	25,351	15,687	1,926	42,963
Total Lives Saved (Deaths Averted)	10,701	8,158	212	19,071
Total DALYs Saved (thousands)	502	369	11	882
Total DALYs Saved (thousands, discounted)	436	320	10	
Cost-Effectiveness Analyses			**$2,404.46**	
Cost per DALY saved (total cost)	$252.63	$302.43	$1,808.82	$300.88
Cost per DALY saved (marginal costs)	$175.38	$254.01	$2,377.77	$229.06
Cost per DALY saved (total cost, discounted)	$256.20	$305.89	$1,781.34	$304.58
Cost per DALY saved (marginal costs, discounted)	$176.13	$255.64		
Total Savings in Treatment Costs (thousands)	**-$24,764**	**-$15,705**	**-$1,229**	**-$41,842**
Total Savings in Treatment Costs (thousands, discounted)	-$21,489	-$13,643		

Annex-1
AGENDA
Pakistan AEM Workshop
(Intervention and Impact Analysis)
Lahore, Pakistan
3-7 April, 2017

Day 1: Monday, 3 April 2017

Time	Agenda item	Session details	Expected outputs
08:45-09:00	Registration Introduction and welcome remark	*NACP*	
09:00-10:45	**Session 1: Discussion on provincial and national scenarios/policy analysis**	• Brief re-cap about AEM intervention and impact analysis workbooks • Detailed discussion on national and provincial scenarios (National, Punjab, Sindh, KPK ?, Balochistan?) *Presentations/ Discussions* ***Facilitators: Ye Yu, Khin Cho and Thu Anh*** **Note:** This session will lay the ground for policy and impact analyses of the AIDS response by defining scenarios/interventions that are tailored to the national/provincial HIV epidemic	National as well as provincial-specific intervention scenarios defined and agreed
10:45-11:00	*Coffee Break*		
11:00-12:00	**Session 1: Continued**		
12:00-13:00	*Lunch break*		
13:00-15:00	**Session 2: Define coverage and best practices by populations and provinces**	Each province will discuss ❖ Detailed discussion on coverage by population that entails: ➢ Components of coverage (intervention) ➢ Frequency ➢ Service delivery model ➢ Consensus on baseline coverage	1. Baseline coverages by population for each province defined and agreed 2. Components of intervention packages by key populations

		❖ Detailed discussion on best practices by populations that entails: ➢ Maximum coverage ➢ Components of coverage ➢ Behaviour change ➢ Change is HIV and/or STI prevalence ***Facilitators: Ye Yu, Khin Cho and Thu Anh***	defined and agreed 3. Parameters for best practices by key populations defined and agreed
15:00-15:15	*Coffee Break*		
15:15–16:30	**Session 2: Continued**		
16:30-17:15	**Session 3: Preparation of reference data sheet for the intervention workbook**	• Data entry and documentation of baseline coverage and best practices by populations and parameters of defined scenarios ***Facilitators: Ye Yu,Khin Cho and Thu Anh***	Reference data sheets populated with defined and agreed parameters for baseline, best practices and interventions
17:15-17:30	Wrap up, conclusions, remarks	Summary of the day by lead facilitator(s)	Taking stock for the day, preparing minds for the next day

Day 2: Tuesday, 4 April 2017

Time	Agenda item	Session details	Expected outputs
09:00–10:30	**Session 4: Unit cost by population and intervention**	• Review, discuss, and calculate the required unit cost by population and intervention (by provinces and national) ***Facilitators: Ye Yu,Khin Cho and Thu Anh***	Unit costs by population and intervention reviewed and discussed
10:30-10:45	*Coffee break*		
10:45-12:00	**Session 4: Continued**		
12:00-13:00	*Lunch break*		
13:00-16:00	**Session 5: Synthesis of baseline AIDS spending and mapping/cross-**	• Discuss, review and mapped the baseline spending and unit cost ***Facilitators: Ye Yu, Khin Cho***	Baseline AIDS spending synthesized and mapped for unit costs

	walking for unit cost (By provinces and national)	***and Thu Anh***	
16:00-16:15	*Coffee break*		
16:15-17:15	**Session 6: Triangulation and adjustments of unit cost for data inputs**	Discuss, review the programme unit cost vs.unit costs from baseline AIDS spending to come-up with final unit costs for data inputs ***Facilitators: Ye Yu, Khin Cho and Thu Anh***	Unit costs for data inputs triangulated, discussed and agreed
17:15-17:30	Wrap up, conclusions, remarks	Summary of the day by lead facilitator(s)	Taking stock for the day, preparing minds for the next day

Day 3: Wednesday, 5 April 2017

Time	Agenda item	Session details	Expected outputs
09:00–10:30	**Session 5: Continued**		
10:30-10:45	*Coffee Break*		
10:45-12:00	**Session 6: Data inputs for intervention workbooks (by provinces)**	• Data entry for scenarios in intervention workbooks *Hands on working session* ***Facilitators: Ye Yu,Khin Cho and Thu Anh***	Intervention workbooks populated with required parameters
13:00-14:00	*Lunch break*		
14:00-16:00	**Session 6: Data inputs for intervention workbooks (by provinces)**	• Data entry for scenarios in intervention workbooks *Hands on working session* ***Facilitators: Ye Yu,Khin Cho and Thu Anh***	Intervention workbooks populated with required parameters
16:00-16:15	*Coffee break*		
16:15-17:15	**Session 6: Data inputs for intervention workbooks (by provinces and national)**	• Data entry for scenarios in intervention workbooks *Hands on working session* ***Facilitators: Ye Yu,Khin Cho and Thu Anh***	Intervention workbooks populated with required parameters

17:15-17:30	Wrap up, conclusions, remarks	Summary of the day by lead facilitator(s)	Taking stock for the day, preparing minds for the next day

Day 4: Thursday, 6 April 2017

Time	Agenda item	Session details	Expected outputs
9:00 - 10:00	**Session 7: Provincial impact analysis**	• Running impact analysis by provinces • Discussion on the results of impact analysis *Hands on working session* ***Facilitator: Ye Yu, Khin Cho, Thu Anh***	Impact analysis by provinces reviewed and discussed
10:00 -10:15	*Coffee Break*		
10:15 -12:30	**Session 7: Continued**		
12:30-13:00	**Session 8: National impact analysis**	• Running combined impact analysis • Discussion on the results of impact analysis *Hands on working session* ***Facilitator: Ye Yu, Khin Cho, Thu Anh***	Impact analysis at the national level reviewed and discussed
13:00-14:00	*Lunch break*		
14:00-16:00	**Session 9: Analysis of return on investment (ROI) by provinces and national**	• Calculate ROI by intervention scenarios based on the results from impact analyses *Hands on working session* ***Facilitator: Ye Yu, Khin Cho, Thu Anh***	ROI by intervention scenarios calculated, reviewed and discussed
16:00-16:15	*Coffee break*		
16:15-17:15	**Session 9: Continued**		
17:15-17:30	Wrap up, conclusions, remarks	Summary of the day by lead facilitator(s)	Taking stock for the day, preparing minds for the next day

Day 5: Friday, 7 April 2017

Time	Agenda item	Session details	Expected outputs
9:00-10:00	**Session 10: Impact analysis presentation: national and provincial**	• Brief presentation on intervention scenarios, resource needs, impacts and return on investment *Presenters: Provincial teams and NACP* **Note:** Each presentation will be followed by Q& A and discussions	
10:00-10:15	**Coffee Break**		
10:15-12:30	**Session 10: Continued**		
12:30 – 13:00	**Closing and concluding remarks**	NACP and UNAIDS	

Approved By
Dr. Quaid Saeed
Senior Programme Coordinator