

Implications of Sub-optimal Use Practices of LLINs on Malaria Control Initiatives: A Case Study from Pakistan

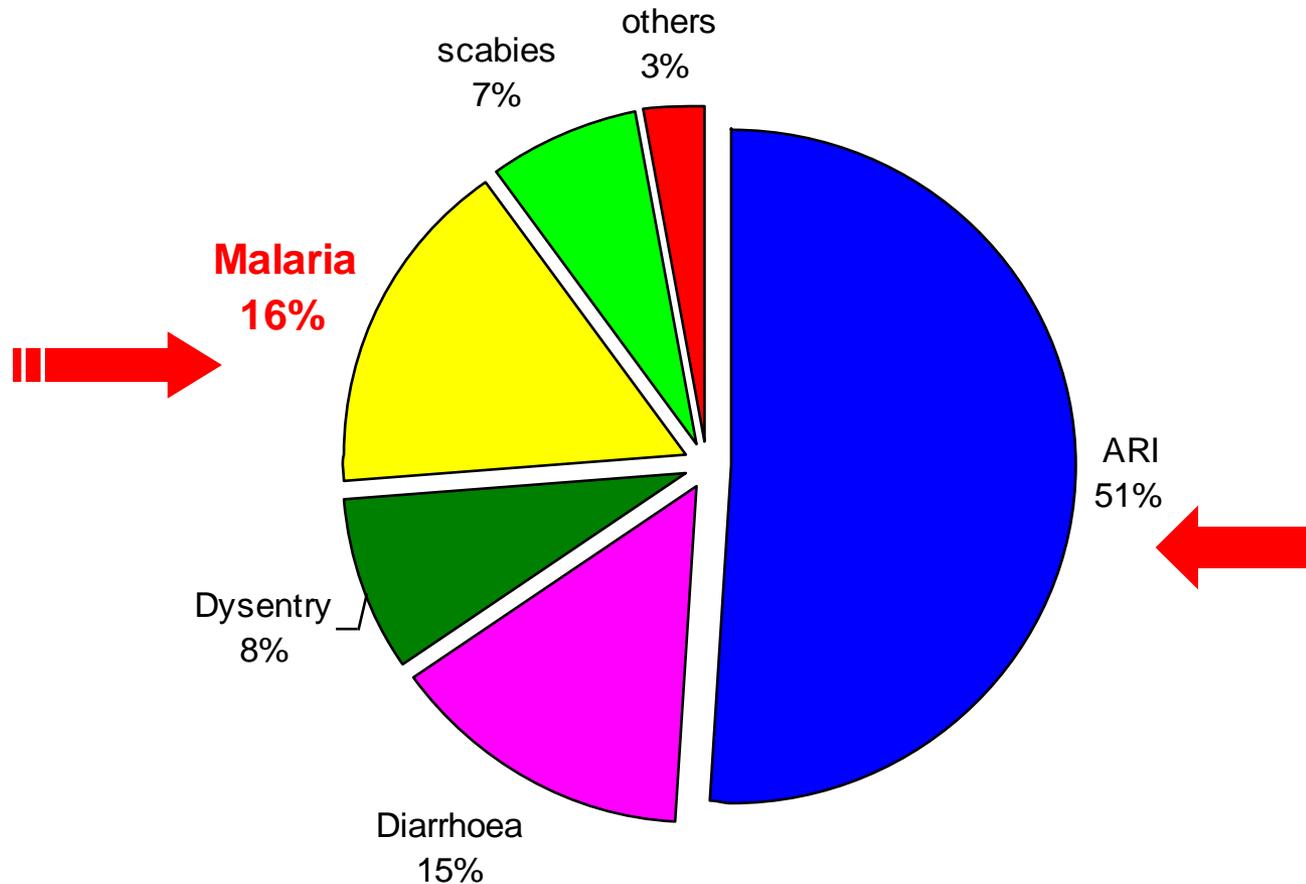


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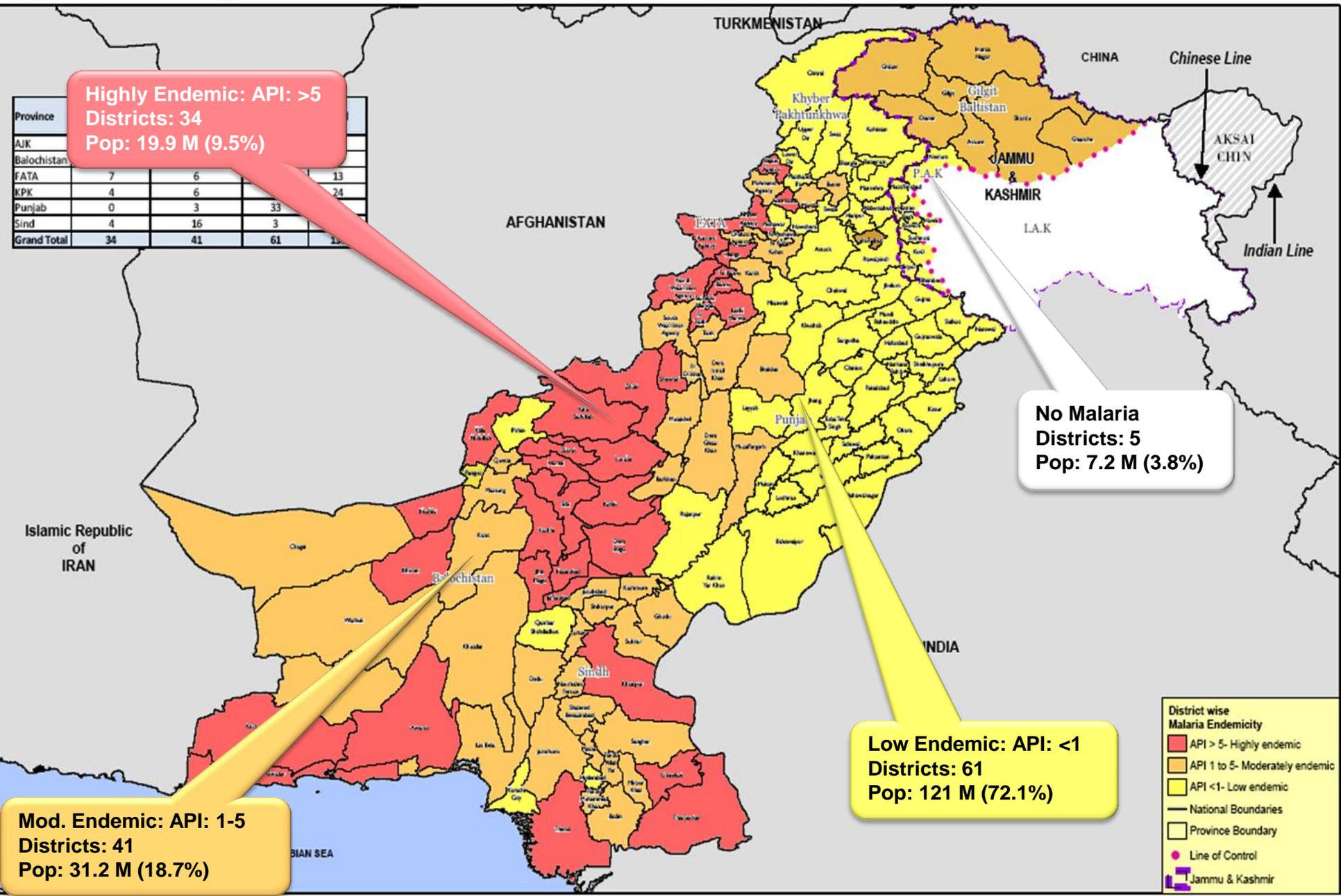
Directorate of Malaria Control: M/o National Health Services-
Pakistan

Top Priority Diseases of Pakistan

Currently malaria is the 2nd most prevalent and devastating disease in the country.



Pakistan: District-wise Malaria Endemicity 2013/14



National Malaria Control Strategy

- ***Malaria Control*** is one of top priority areas in National Health Policy (2009)
- ***National Malaria Control Strategy*** based on;
 - Early Diagnosis & Prompt Treatment
 - Multiple Prevention (IRS, LNs, LSM etc)
 - Epidemic Preparedness
 - Behavior Change Communication (BCC),
 - Partnership Building
- **Goal: Reduction of malaria burden by 60% in till 2020 using the baseline of 2010 (API: 0.88)**



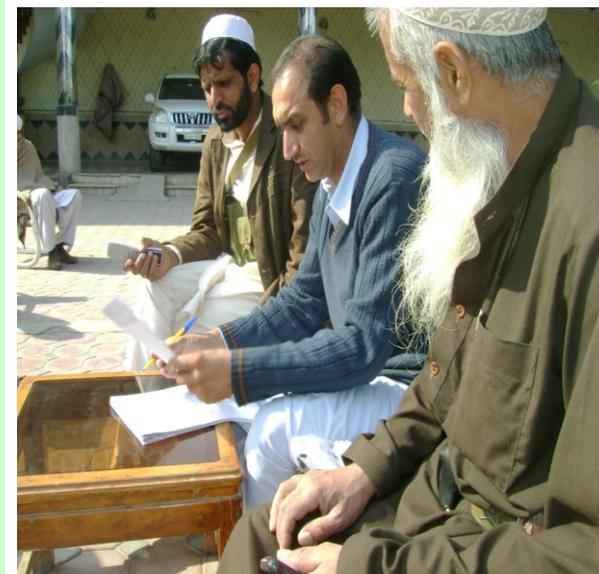
Use of Long Lasting Insecticidal Nets (LLIN) in Pakistan

- Use of LLINs has become a major vector control intervention since 2006/07
- About 8.7 M (94.3% polyester-made, rectangular shape) LLINs have so far been distributed through;
 - internal (public) & external (GFATM/UN Agencies) resources
 - using multiple distribution channels (community-based distribution, ANC services, special campaigns etc)
- Major beneficiaries: PW & Child <5 (2011)
- 2015-17, another 4.9 M LLINs will be distributed through TGF under NFM
- However the information on community knowledge, awareness, use practices of LLINs is not fully available in country 2010.



Study Design & Objective

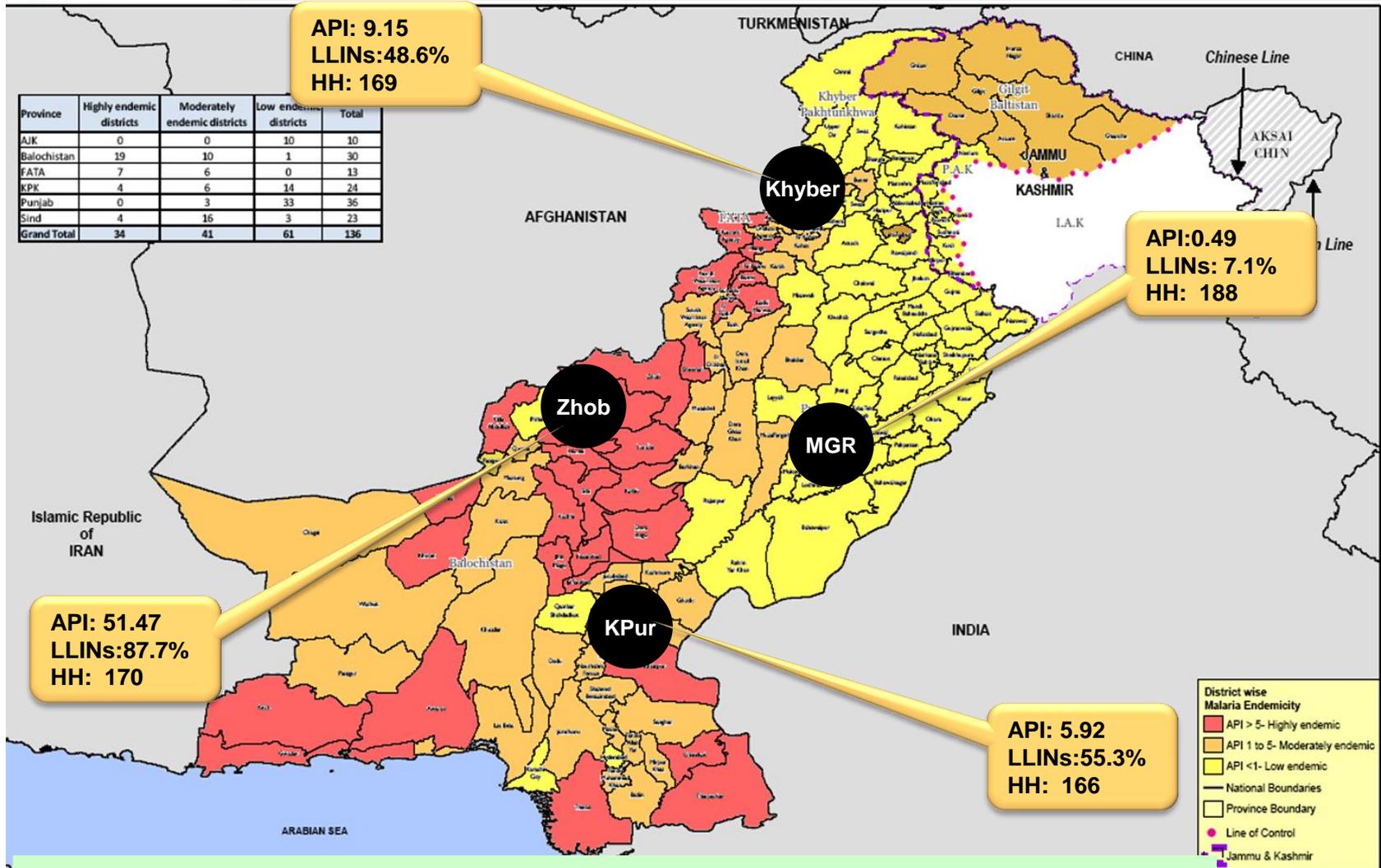
- A wider study (2010-2013) where six brands of WHOPEs recommended LLINs were distributed and evaluated for;
 - their acceptance and preferences (texture, shape, color, size, frequency of use, associated benefits, side effects etc) to find *“the best community-accepted LLIN”* in Pakistan.
 - physical stability after 2-3 year field use
- A community-based cross-sectional survey was conducted in 693 HHs in four districts during 2010 & 2011
- Information collected by HH survey and FGD
- *To assess the K.A & P of local communities using LLINs for malaria control & finally to formulate & implement a cost-effective, sustainable and community-friendly strategy for scaling up the use of LLINs in Pakistan.*



Description of Study Areas



Pakistan: District-wise Malaria Endemicity 2013/14



4 districts presenting different ecologies and a wide diversity of endemicity (ranging API from 0.46 -51.47).



Results

Socio-Demographic Characteristics of Selected HHs

Name of districts	Muzafargarh		Khairpur		Zhob		Khyber		Total	
Number of selected HH	188	%	166	%	170	%	169	%	693	%
<i>HH characteristics</i>										
Average HH size	5.1		5.5		5.2		6.1		-	5.5
HH with at least one child <5 year	131	69.7	122	73.5	128	75.3	121	71.6	502	72.4
HH with mother of productive age	10	5.3	9	5.4	12	7.1	11	6.5	42	6.1
<i>Number of room per household</i>										
1	13	6.9	17	10.2	0	0.0	0	0.0	30	4.3
2	98	52.1	112	67.5	50	29.4	47	27.8	307	44.3
3	52	27.7	33	19.9	107	62.9	103	60.9	295	42.6
4	25	13.3	4	2.4	13	7.6	19	11.2	61	8.8
<i>HH structure made of</i>										
Mud	24	12.8	39	23.5	9	5.3	17	10.1	89	12.8
Bricks	139	73.9	109	65.7	142	83.5	139	82.2	529	76.3
Other (Straw and thatch)	25	13.3	18	10.8	19	11.2	13	7.7	75	10.8
<i>Animal keeping practices</i>										
Inside house	99	52.7	119	71.7	135	79.4	106	62.7	459	66.2
Outside house	89	47.3	47	28.3	35	20.6	63	37.3	234	33.8
<i>Availability of electricity</i>										
Yes	188	100.0	153	92.2	148	87.1	147	87.0	636	91.8
No	0	0.0	13	7.8	22	12.9	22	13.0	57	8.2
<i>Presence of television/radio</i>										
Yes	188	100.0	157	94.6	148	87.1	158	93.5	651	93.9
No	0	0.0	9	5.4	22	12.9	11	6.5	42	6.1
<i>Head of family</i>										
Male (Father)	176	93.6	157	94.6	162	95.3	160	94.7	655	94.5
Female (Mother)	12	6.4	9	5.4	8	4.7	9	5.3	38	5.5

Socio-Demographic Characts. of Selected HHs (Cont ...)

Name of districts	Muzafargarh		Khairpur		Zhob		Khyber		Total	
Number of selected HH	188	%	166	%	170	%	169	%	693	%
<i>HH heads literacy level</i>										
None	93	49.5	104	62.7	156	91.8	157	92.9	510	73.6
Primary	81	43.1	59	35.5	12	7.1	9	5.3	161	23.2
Secondary	10	5.3	3	1.8	2	1.2	3	1.8	18	2.6
Higher secondary	4	2.1	0	0.0	0	0.0	0	0.0	4	0.6
<i>HH main occupation</i>										
Farming	149	79.3	148	89.2	92	54.1	87	51.5	476	68.7
Casual labor	23	12.2	8	4.8	42	24.7	39	23.1	112	16.2
Self employment	13	6.9	8	4.8	36	21.2	43	25.4	100	14.4
Government services	3	1.6	2	1.2	0	0.0	0	0.0	5	0.7
<i>Self-rated poverty status of HH</i>										
Very poor	51	27.1	58	34.9	51	30.0	55	32.5	215	31.0
Poor	66	35.1	58	34.9	62	36.5	43	25.4	229	33.0
Average	45	23.9	34	20.5	37	21.8	43	25.4	159	22.9
Good	26	13.8	16	9.6	20	11.8	28	16.6	90	13.0

Knowledge of bed nets, their uses and associated factors/benefits

Name of districts	Muzafargarh		Khairpur		Zhob		Khyber		Total	%
	Total	%	Total	%	Total	%	Total	%		
<i>HH with LNs at the time of survey</i>									693	100
Yes	36	19.1	105	63.3	129	75.9	100	59.2	370	53.4
No	152	80.9	61	36.7	41	24.1	69	40.8	323	46.6
<i>Types/brands of available LN</i>									370	100
PermaNet02	28	77.8	84	80.0	95	73.6	72	72.0	279	75.4
Dawa Plus	3	8.3	9	8.6	11	8.5	9	9.0	32	8.6
Olyset	5	13.9	12	11.4	23	17.8	19	19.0	59	15.9
<i>Physical condition of LNs with age of 1-2 years</i>									370	100
Not damaged	21	58.3	77	73.3	93	72.1	70	70.0	261	70.5
Partially damaged	10	27.8	19	18.1	23	17.8	20	20.0	72	19.5
Fully damaged	5	13.9	9	8.6	13	10.1	10	10.0	37	10.0
<i>Repairing methods</i>									370	100
Stitching	15	41.7	49	46.7	87	67.4	49	49.0	200	54.1
Knotting	2	5.6	5	4.8	0	0.0	6	6.0	13	3.5
Discard	9	25.0	22	21.0	16	12.4	17	17.0	64	17.3
No action	9	25.0	29	27.6	26	20.2	25	25.0	89	24.1
<i>Source of provision of LNs</i>									370	100
GFATM and NGOs	34	94.4	69	65.7	82	63.6	54	54.0	239	64.6
Malaria control program	0	0.0	34	32.4	43	33.3	44	44.0	121	32.7
Purchased	2	5.6	2	1.9	4	3.1	2	0.0	10	2.7

Knowledge of LLINs, their Uses & Associated factors/benefits

<i>Hanging of LNs (All the time)</i>									370	100
Yes	1	2.8	9	8.6	39	30.2	8	8.0	57	15.4
No	34	94.4	93	88.6	88	68.2	85	85.0	300	81.1
No answer	1	2.8	3	2.9	2	1.6	7	7.0	13	3.5
<i>If not all the time, when fix for sleeping</i>									300	100
Immediately after sunset	6	17.6	6	6.5	6	6.8	6	7.1	24	8.0
After Dinner (8-9 pm)	18	52.9	18	19.4	18	20.5	18	21.2	72	24.0
When get time	3	8.8	3	3.2	3	3.4	3	3.5	12	4.0
Immediate before sleeping	7	20.6	66	71.0	61	69.3	58	68.2	192	64.0
<i>If fixed immediate before sleeping, any experience of mosquito bite</i>									192	100
Yes	5	71.4	58	87.9	56	91.8	57	98.3	176	91.7
No	2	28.6	5	7.6	3	4.9	0	0.0	10	5.2
No answer	0	0.0	3	4.5	2	3.3	1	1.7	6	3.1
<i>Reasons for late fixing of LNs</i>									176	100
Busy in HH matters	5	100.0	53	91.4	51	91.1	43	75.4	152	86.4
Responsible person come late	0	0.0	3	5.2	0	0.0	4	7.0	7	4.0
No particular reasons	0	0.0	2	3.4	5	8.9	10	17.5	17	9.7

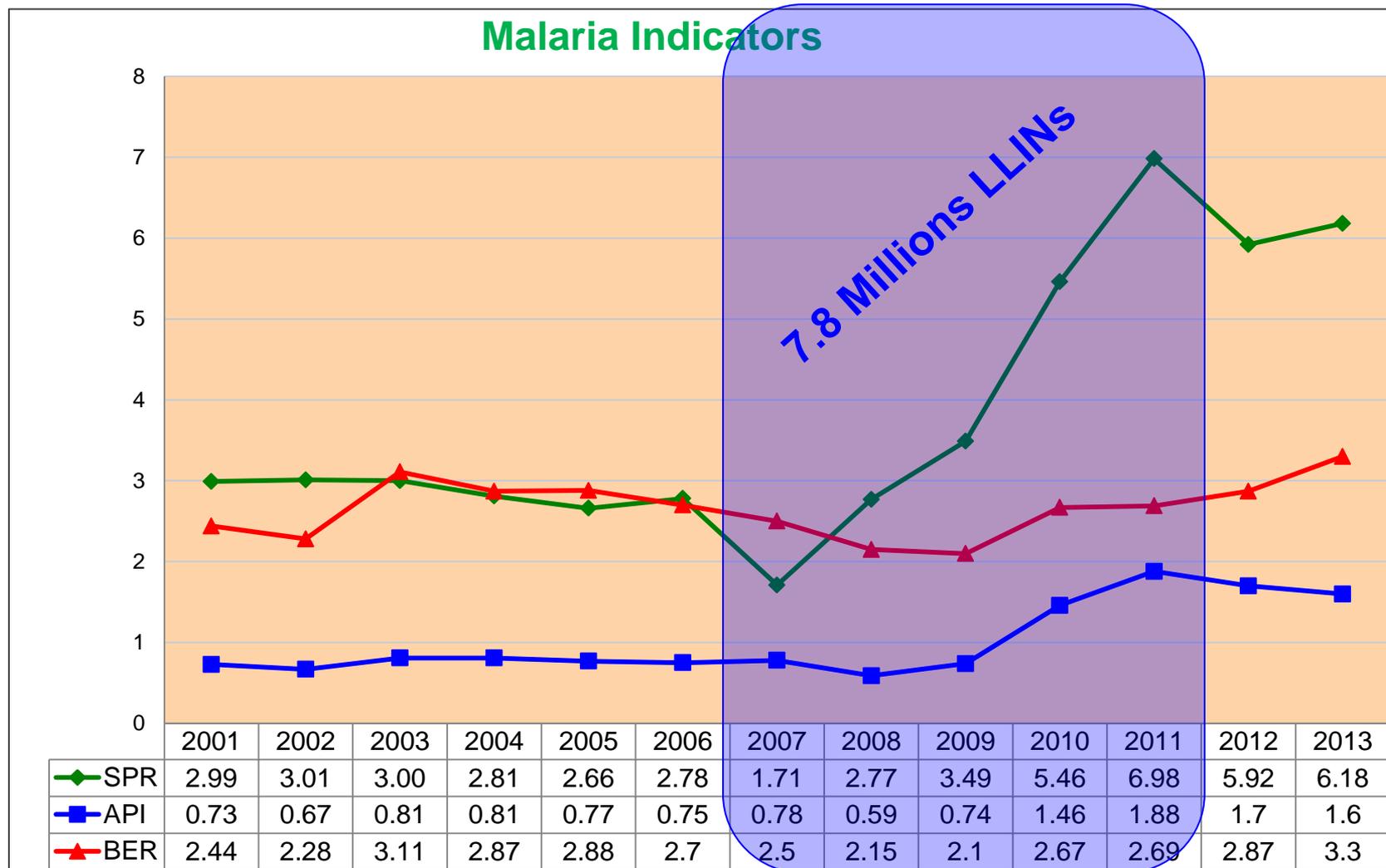
Knowledge of LLINs, their Uses & Associated benefits (Cont...)

<i>Sleeping under LNs last night</i>	Muzafargarh		Khairpur		Zhob		Khyber		370	100	
Yes	11	30.6	32	30.5	64	49.6	24	24.0	131	35.4	
No	24	66.7	71	67.6	65	50.4	74	74.0	234	63.2	
No answer	1	2.8	2	1.9	0	0.0	2	2.0	5	1.4	
<i>If yes, main beneficiaries</i>										131	100
Children <5 years and mother	8	72.7	18	56.3	56	87.5	12	50.0	94	71.8	
Head of family	1	9.1	8	25.0	5	7.8	6	25.0	20	15.3	
All	2	18.2	6	18.8	3	4.7	6	25.0	17	13.0	
<i>In case of not daily use, frequency of use</i>										234	100
On 2 nd 3 rd day	17	70.8	55	77.5	56	86.2	49	66.2	177	75.6	
On 4 th 5 th day	4	16.7	9	12.7	1	1.5	3	4.1	17	7.3	
Not particular (any day)	3	12.5	7	9.9	8	12.3	22	29.7	40	17.1	
<i>Reasons for not using LLINs regularly (daily)</i>										234	100
Lack of fixing materials	9	37.5	24	33.8	28	43.1	30	40.5	91	38.9	
Hotness and suffocation inside LLIN	5	20.8	15	21.1	0	0.0	12	16.2	32	13.7	
Less number of LLINs	7	29.2	19	26.8	32	49.2	18	24.3	76	32.5	
Sleeping outside the home	0	0.0	2	2.8	2	3.1	2	2.7	6	2.6	
Side effects	2	8.3	10	14.1	3	4.6	10	13.5	25	10.7	
<i>Receiving of instructions for use of LLINs</i>										370	100
Yes	17	47.2	61	58.1	83	64.3	55	55.0	216	58.4	
No	19	52.8	44	41.9	46	35.7	45	45.0	154	41.6	
<i>If yes, type of instructions</i>										216	100
Verbal	9	52.9	34	55.7	58	69.9	24	43.6	125	57.9	
Written (Brochure, booklet)	8	47.1	27	44.3	25	30.1	31	56.4	91	42.1	

Knowledge of LLINs, their Uses & Associated benefits (Cont...)

<i>Washing interval</i>	Muzafargarh		Khairpur		Zhob		Khyber		370	100	
Once in 1 month	23	63.9	57	54.3	46	35.7	51	51.0	177	47.8	
Once in 2 m	9	25.0	42	40.0	50	38.8	36	36.0	137	37.0	
Once in 3-4 m	0	0.0	0	0.0	23	17.8	5	5.0	27	7.3	
When get dirty	4	11.1	6	5.7	10	7.8	8	8.0	29	7.8	
<i>Washing methods</i>										370	100
By hand	29	80.6	79	75.2	97	75.2	71	71.0	276	74.6	
By washing machine	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	
Soaking in water	7	19.4	26	24.8	32	24.8	29	29.0	94	25.4	
<i>In case soaking, duration of soaking (hours)</i>										94	100
<1	0	0.0	5	19.2	7	21.9	6	20.7	18	19.1	
1	5	71.4	19	73.1	21	65.6	20	69.0	65	69.1	
2	2	28.6	2	7.7	4	12.5	3	10.3	11	11.7	
<i>Washing materials</i>										370	100
Soap	25	69.4	84	80.0	90	69.8	59	59.0	258	69.7	
Detergent	11	30.6	21	20.0	39	30.2	41	41.0	112	30.3	
<i>If soap, types of soaps</i>										258	100
Branded	12	48.0	67	79.8	71	78.9	42	71.2	192	74.4	
N. branded (Home-made)	13	52.0	17	20.2	19	21.1	17	28.8	66	25.6	
<i>Buying of LLINs, if not available free of cost</i>										370	100
	27	75.0	99	94.3	125	96.9	78	78.0	329	88.9	
	9	25.0	6	5.7	4	3.1	22	22.0	41	11.1	

Consequences of Sub-optimal Use Practice on Malaria Burden



Conclusion and Recommendations

Conclusion

- 1) None of the HHs has sufficient coverage with LNs and those who owned LNs did not fully understand their significance
- 2) Incorrect use and maintenance practices and poor compliance of LLIN at community level pose crucial challenges for malaria control efforts in the country.

Recommendations

- 1) Direct interaction with communities to modify the knowledge, beliefs, behavior and use practices of LNs prior to their distribution is highly recommended
- 2) Feedback from local communities through KAP studies should be taken into account to design and implement evidence-based, sustainable and community friendly BCC strategy to get the full benefits of LNs for malaria control in Pakistan.

Lessons Leant and Way Forward for NMCP

- Revision of “*National LLINs Distribution Strategy*” 2014/15 focusing;
 - 100% coverage of target districts (Universal Coverage: 1 LLIN/2 family members)
 - Strengthening of *Continuous Distribution (CD)* approach
 - 100% replacement of LLINs in case of lost/damage
 - 100% coverage of population in case of natural disaster/ emergencies etc
- Resource mobilization from Govt sector
- Appointment of a “*Full Time BCC*” coordinator and community based volunteers
- Training of “Community Representatives” from local community to trickle down the impact at HH level
- Development of “*Guidelines for Use of LLINs at Community-Level*” in local languages

Thank you All



Healthy Pakistan is Our Prime Mission

