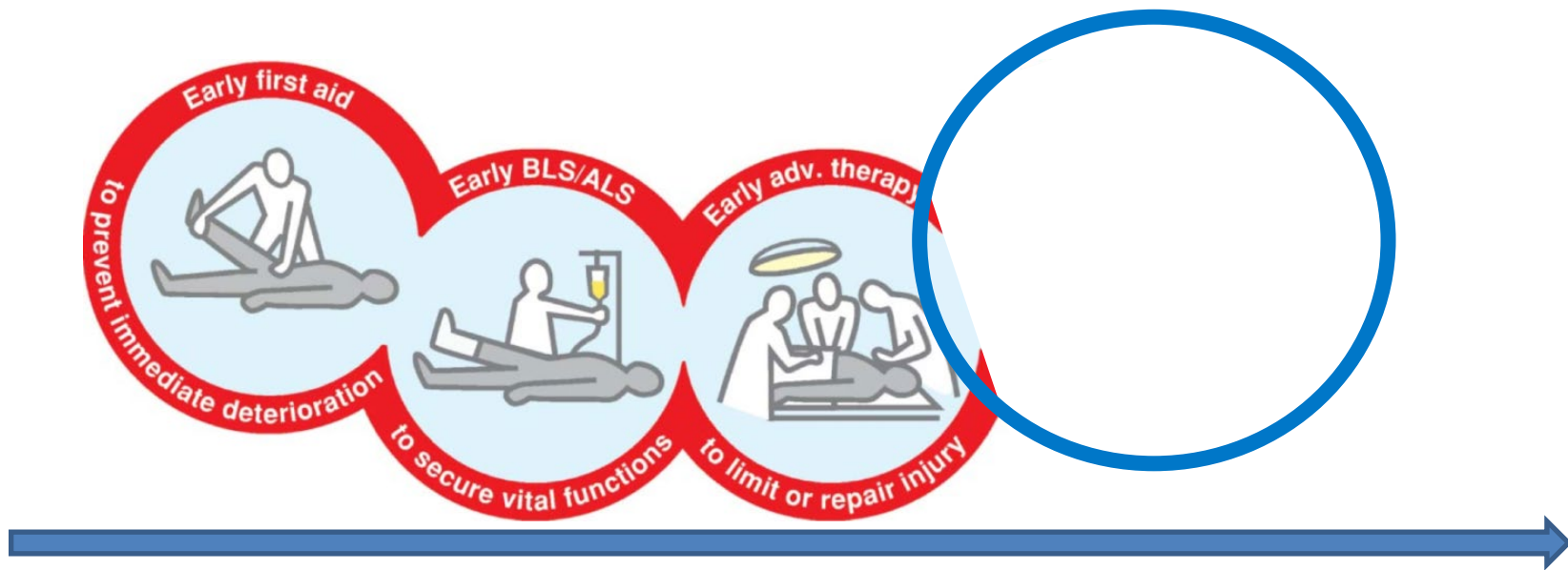




# Determinants of functional outcomes after trauma



# Saving life & limbs



 Soreide, 2011

“People have access to safe and effective trauma care during crises to prevent avoidable mortality, morbidity, suffering and disability.”

(Sphere 2018)

Table № 17: Intraoperative mortality, by project, 2014 – 2018.

Intraoperative mortality		Kabul	Khost	Bujumbura	Bangassou	Castons	Kananga	Masisi	Nyabondo	Tabarre	East Mosul	Bar Elias	Basakounou	Al-Awda	Timurgara	Pibor
2014	Nº	2	1	...	4	3	...	5	...	17	...	...	0	...	3	...
	%	0,2	0,1	...	0,4	0,3	...	0,5	...	0,17	...	...	0,0	...	0,3	...
2015	Nº	...	...	...	...	...	...	...	...	...	...	...	...	...	6	...
	%	...	...	...	...	...	...	...	...	...	...	...	...	...	0,5	...
2016	Nº	...	...	...	...	...	...	...	...	...	...	...	...	...	7	0
	%	0,1	0,1	0,1	0,2	0,3	...	0,1	...	0,3	...	...	0,0	...	0,5	0,0
2017	Nº	1	4	9	5	3	1	6	0	10	...	...	0	...	5	0
	%	0,1	0,4	0,2	0,4	0,2	0,1	0,2	0,0	0,2	...	...	0,0	...	0,3	0,0
2018	Nº	2	6	9	2	3	1	7	0	15	0	0	1	0	3	1
	%	0,2	0,6	0,2	0,2	0,3	0,3	0,2	0,0	0,5	0,0	0,0	0,5	0,0	0,1	0,4

-Mortality rate

Table № 18: Surgical site infection, by project, 2014 – 2018.

Surgical site infection		Kabul	Khost	Bujumbura	Bangassou	Castons	Kananga	Masisi	Nyabondo	Tabarre	East Mosul	Bar Elias	Basakounou	Al-Awda	Timurgara	Pibor
2014	%	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	%	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2015	%	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	%	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2016	%	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	%	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2017	%	0,4	0,7	2,2	ND	1,0	...	1,5	ND	4,4	...	...	...	...	...	...
	%	0,4	0,7	2,2	ND	1,0	...	1,5	ND	4,4	...	...	...	...	...	...
2018	%	0,5	1,3	1,2	ND	1,7	ND	0,7	2,0	7,0	3,7	3,3	ND	ND	ND	ND
	%	0,5	1,3	1,2	ND	1,7	ND	0,7	2,0	7,0	3,7	3,3	ND	ND	ND	ND

- Infection rate  
- Re-admission

Figure № 17: Caseload and occupancy rate, by day and operating room, by project, 2018.

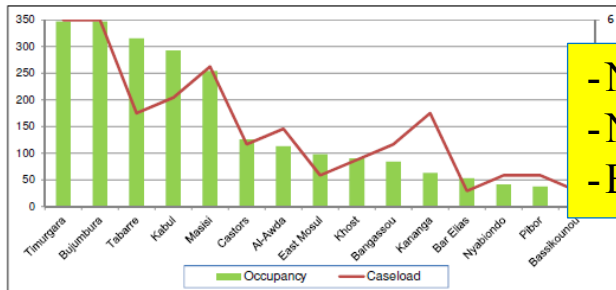
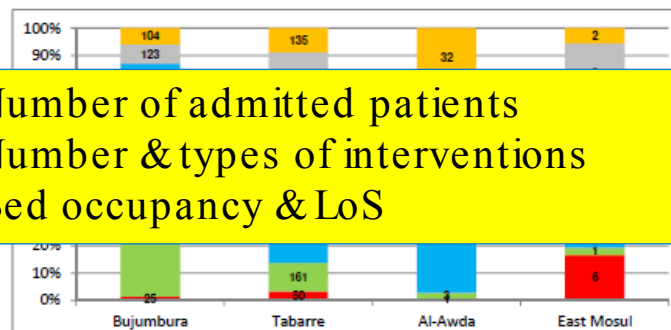
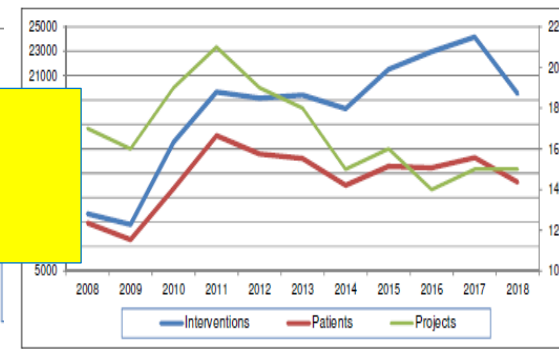


Figure № 10: Orthopaedic procedures, by project, proportions, 2018.



-Number of admitted patients  
-Number & types of interventions  
-Bed occupancy & LoS

Figure № 1: Number of projects, new cases, and performed interventions, 2008 – 2018, per year.



# Activity Independence Measure-Trauma (AIM-T)

(as designed in MSF Kunduz Trauma Center, Afghanistan, 2011)

## Locomotion :

Walking around (<50m)	1 2 3 4 5
Walking around (>50m)	1 2 3 4 5
Going up stairs	1 2 3 4 5
Going down stairs	1 2 3 4 5

## Transfers :

Sit up (supine to sit edge)	1 2 3 4 5
Stand up (sit to stand)	1 2 3 4 5
Sit down (stand to sit)	1 2 3 4 5
Lie down (sit edge to sit)	1 2 3 4 5

## Toilet :

Full squat :

## Pray :

Knelling (sitting)

TOTAL Lower Limb

## Hygiene :

Wash your back

## Dexterity :

...

...

...

...

...

...

...

...

...

...

...

...

Limb score

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

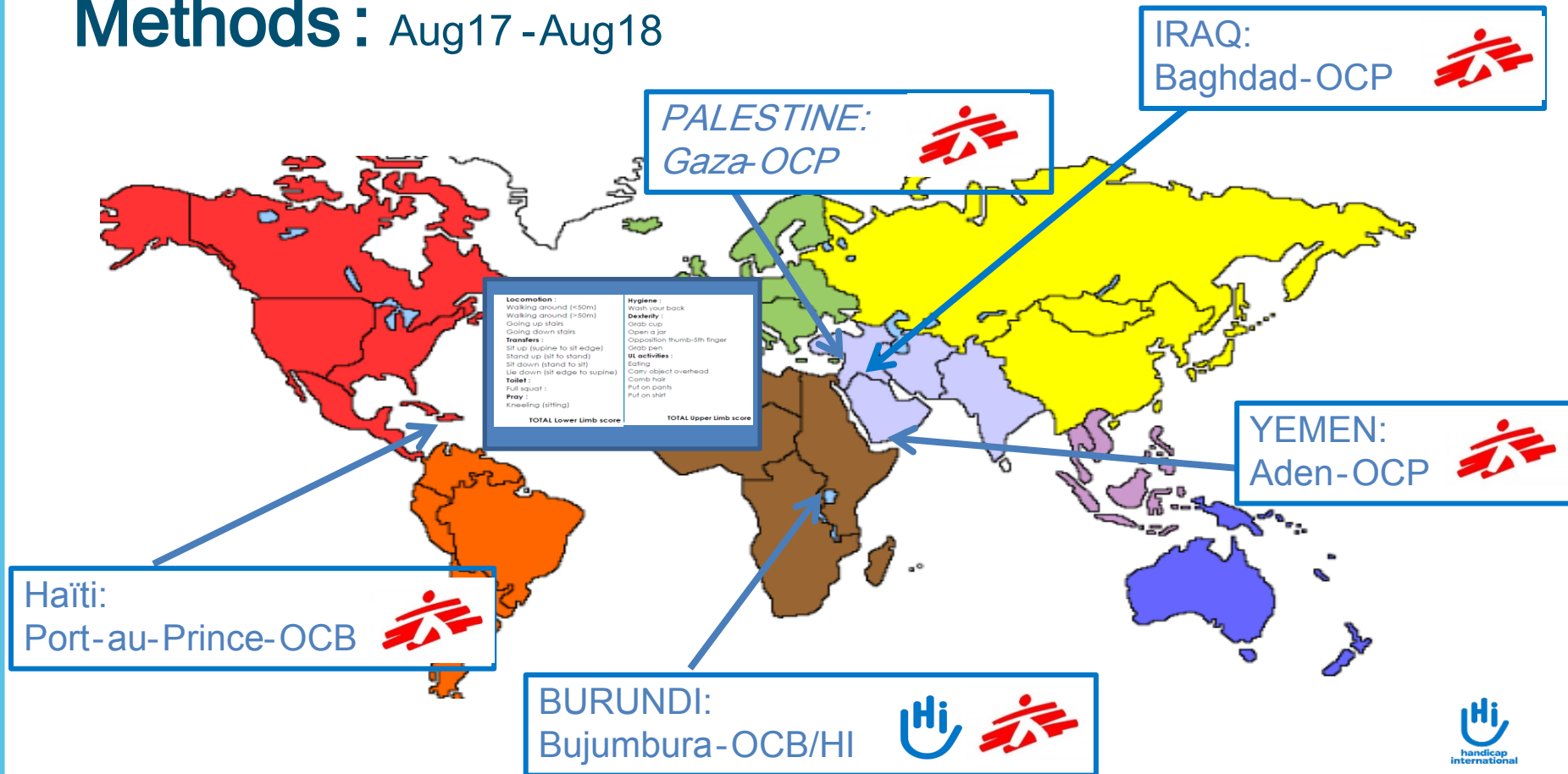
1 2 3 4 5

1 2 3 4 5

\_\_\_\_\_ / 50

- ⇒ Can it be shorter and easier?
- ⇒ Is it relevant in other contexts?
- ⇒ Is it reliable?
- ⇒ How can it capture trauma patients' outcomes?
- ⇒ How can it help assess the role of rehabilitation care on recovery process?

# Methods : Aug17 -Aug18



# Can it be shorter and easier?

Using routine data (790 patients), score components were assessed for:

- **Redundancy** (correlation between 2 items  $> 0.90$ )
  - ⇒ If redundant : 1 item should be removed
- **Floor & ceiling effects** ( $>15\%$  patients have minimum or maximum values)
  - ⇒ To inform on which item to remove

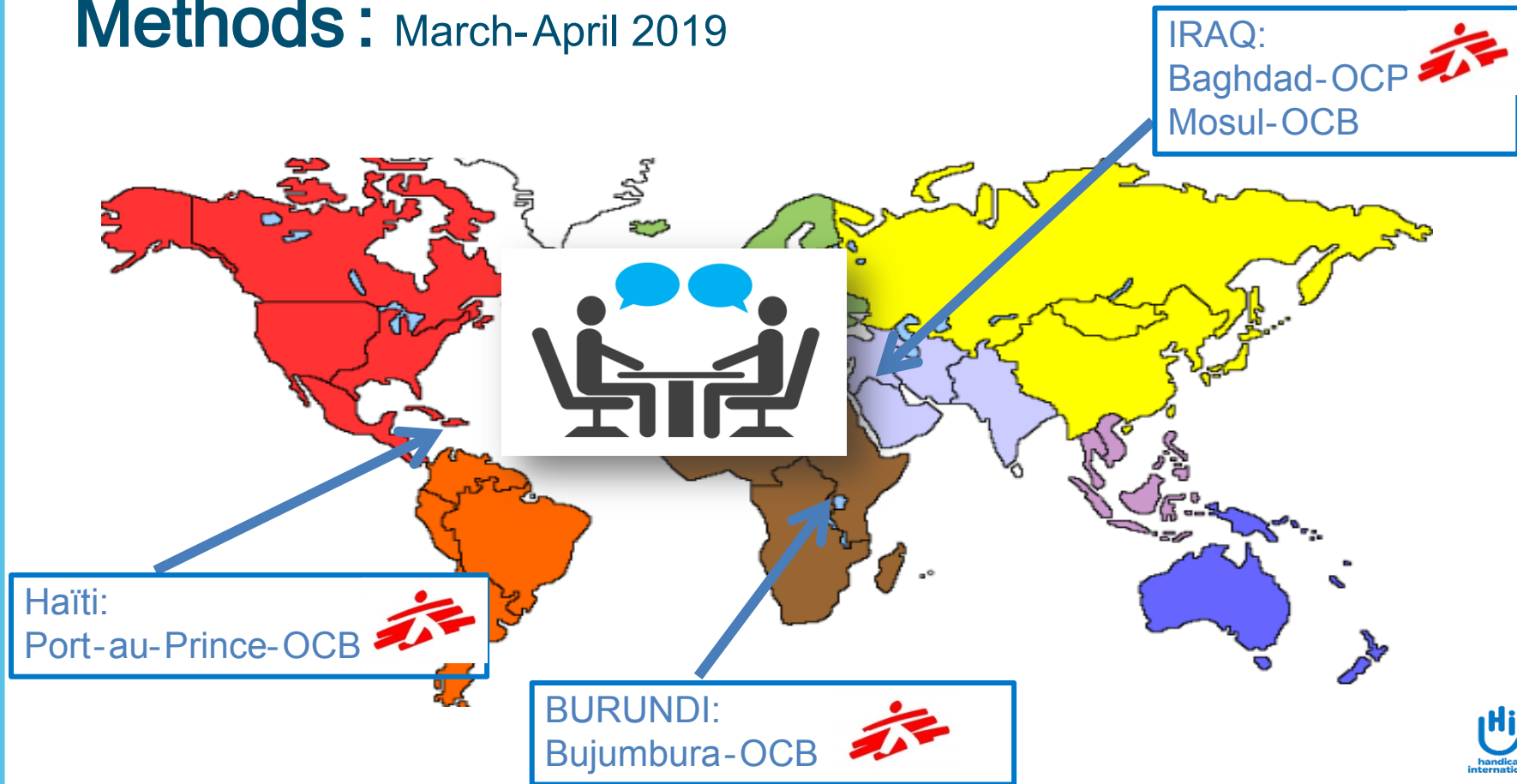
# AIM-T v2

<b>Walking &amp; moving :</b>		<b>Carrying, moving &amp; handling objects:</b>	
Walking around (<50m)	1 2 3 4 5	Grab small objects	1 2 3 4 5
Going up & down 5 steps	1 2 3 4 5	Open a jar	1 2 3 4 5
		Lift & Carry object over shoulder level	1 2 3 4 5
<b>Changing &amp; maintaining position :</b>		<b>Self-care :</b>	
Sit up (supine to sit edge)	1 2 3 4 5	Grooming	1 2 3 4 5
Stand up (sit edge to stand)	1 2 3 4 5	Put on pants	1 2 3 4 5
Lie down (sit edge to lie)	1 2 3 4 5		
Full squat :	1 2 3 4 5		
<b>TOTAL Lower Limb score</b>	<b>__ / 30</b>	<b>TOTAL Upper Limb score</b>	<b>___ / 25</b>

=> Is it relevant in other contexts?



# Methods : March-April 2019



# Is it relevant in other contexts?

Step 2: Structured interviews (61 patients and 22 staff):

- Self-perceived independence and description of situation
- Feedback on the 11 AIM-T activities

If >50% report an activity was not important or not appropriate: to be removed

If >50% suggested the same activity to add: to be added

# Results

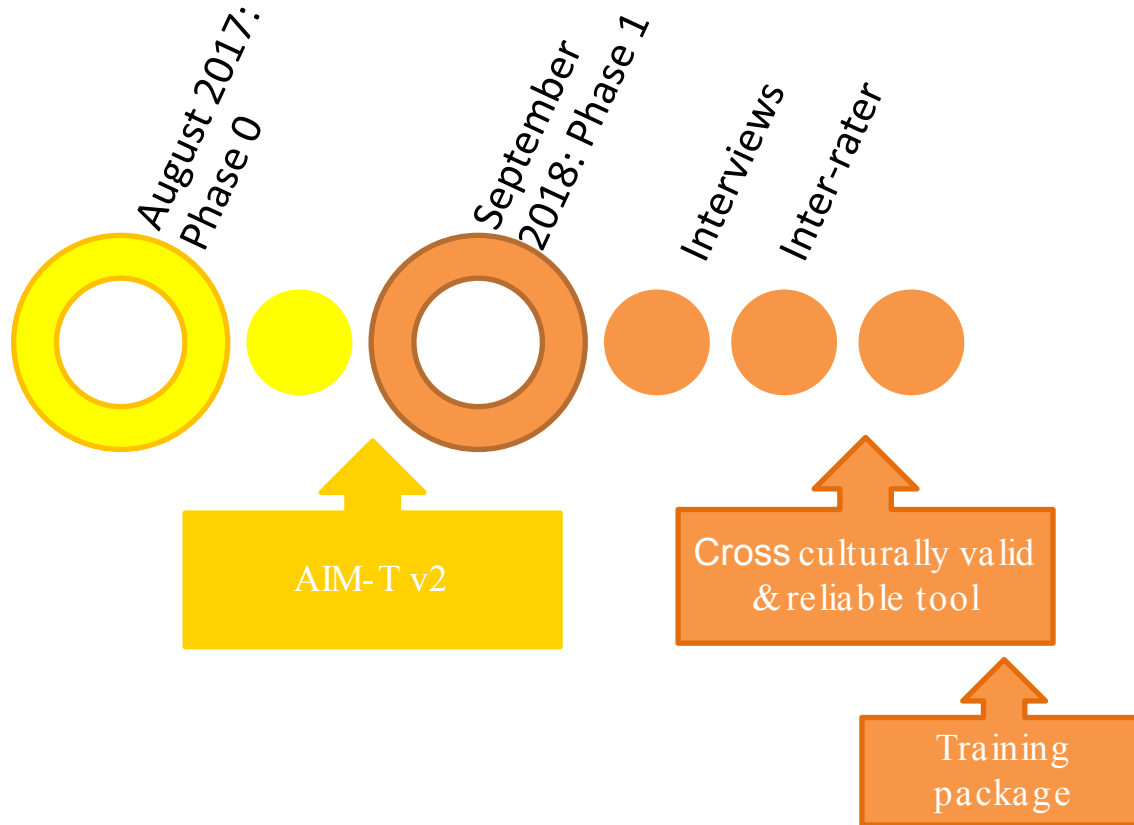
## 11 activities judged important & appropriate by >50 % participants

- Squat: 27,5% not or not really appropriate (but 82% said it was very important)
- Put on pants: 33,8% not or not really appropriate (but 90% said it was very important)
- Stairs: 17% reported that it was not important

## No activities were suggested by >50 % participants :

- Most common suggestion: washing , toileting , walking long distances, run & sport, eating

=> Is it reliable ?



**Walking & moving :**

Walking around (&lt;50m)

1 2 3 4 5

Going up &amp; down 5 steps

1 2 3 4 5

**Changing & maintaining position:**

Sit up (supine to sit edge)

1 2 3 4 5

Stand up (sit edge to stand)

1 2 3 4 5

Lie down (sit edge to lie)

1 2 3 4 5

Full squat:

1 2 3 4 5

**TOTAL Lower Limb score****8 / 30****Carrying, moving & handling objects:**

Grab small objects

1 2 3 4 5

Open a jar

1 2 3 4 5

Lift &amp; Carry object over shoulder level

1 2 3 4 5

**Self-care :**

Grooming

1 2 3 4 5

Put on pants

1 2 3 4 5

**TOTAL Upper Limb score****20 / 25**

Clinical reasoning  
 Encouraging movement  
 Monitoring progress

**Walking & moving :**

Walking around (&lt;50m)

1 2 3 4 5

Going up &amp; down 5 steps

1 2 3 4 5

**Changing & maintaining position:**

Sit up (supine to sit edge)

1 2 3 4 5

Stand up (sit edge to stand)

1 2 3 4 5

Lie down (sit edge to lie)

1 2 3 4 5

Full squat:

1 2 3 4 5

**TOTAL Lower Limb score****20 / 30****Carrying, moving & handling objects:**

Grab small objects

1 2 3 4 5

Open a jar

1 2 3 4 5

Lift &amp; Carry object over shoulder level

1 2 3 4 5

**Self-care :**

Grooming

1 2 3 4 5

Put on pants

1 2 3 4 5

**TOTAL Upper Limb score****24 / 25**

“People have access to safe and effective trauma care during crises to prevent avoidable mortality, morbidity, suffering and disability.”

(Sphere 2018)

Table № 17: Intraoperative mortality, by project, 2014 – 2018.

Intraoperative mortality		Kabul	Khost	Bujumbura	Bangassou	Catour	Kananga	Masaï	Nyabondo	Tabarre	Esti Mosul	Ber Elias	Bassikounou	Al-Awda	Timingara	Pborr
		2014	Nº	2	1	4	3	3	3	3	17	1	0	0	0	3
	%	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
2015	Nº	1	4	9	5	3	1	6	0	10	0	0	0	6	0	0
	%	0,1	0,4	0,2	0,4	0,2	0,1	0,2	0,0	0,2	0,0	0,0	0,0	0,5	0,0	0,0
2016	Nº	2	6	9	2	3	1	7	0	15	0	0	1	0	3	1
	%	0,2	0,6	0,2	0,2	0,2	0,3	0,2	0,0	0,5	0,0	0,0	0,5	0,0	0,1	0,4

- Mortality rate

Table № 18: Surgical site infection, by project, 2014 – 2018.

Surgical site infection		Kabul	Khost	Bujumbura	Bangassou	Catour	Kananga	Masaï	Nyabondo	Tabarre
		2014	%	0,0	0,0	0,0	0,0	0,0	0,0	0,0
2015	%	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	4,2
2016	%	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	3,5
2017	%	0,4	0,7	2,2	ND	1,0	1,0	1,5	ND	4,4
2018	%	0,5	1,3	1,2	ND	1,7	ND	0,7	2,0	7,0

- Infection rate  
- Re-admission

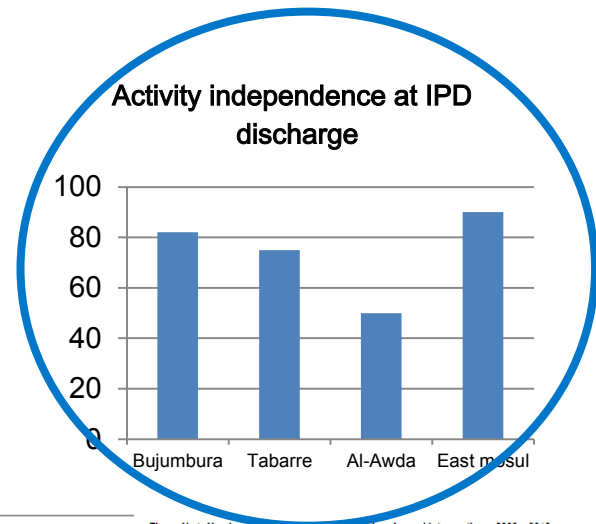


Figure № 17: Caseload and occupancy rate, by day and operating room, by project, 2018.

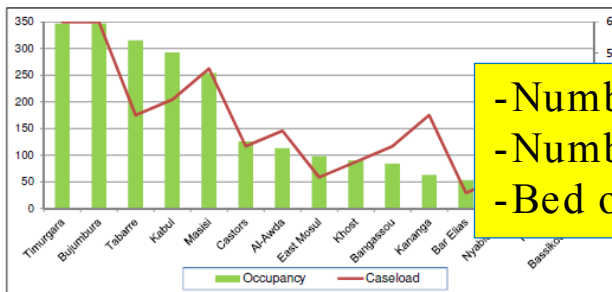
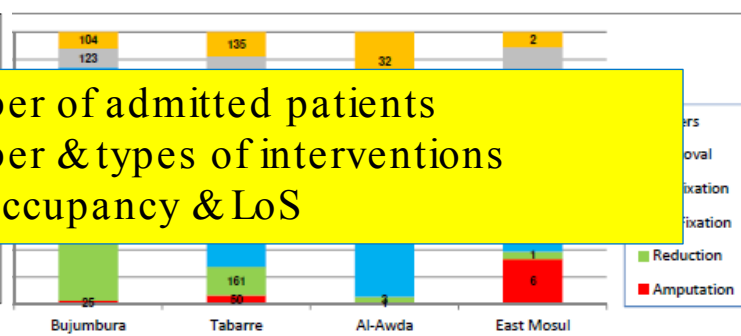
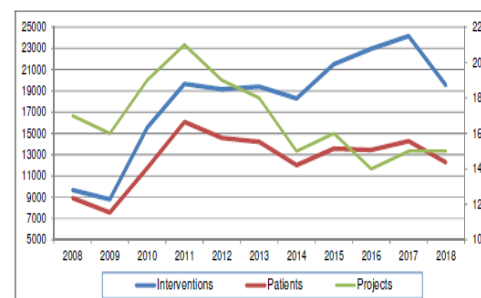


Figure № 10: Orthopaedic procedures, by project, proportions, 2018.

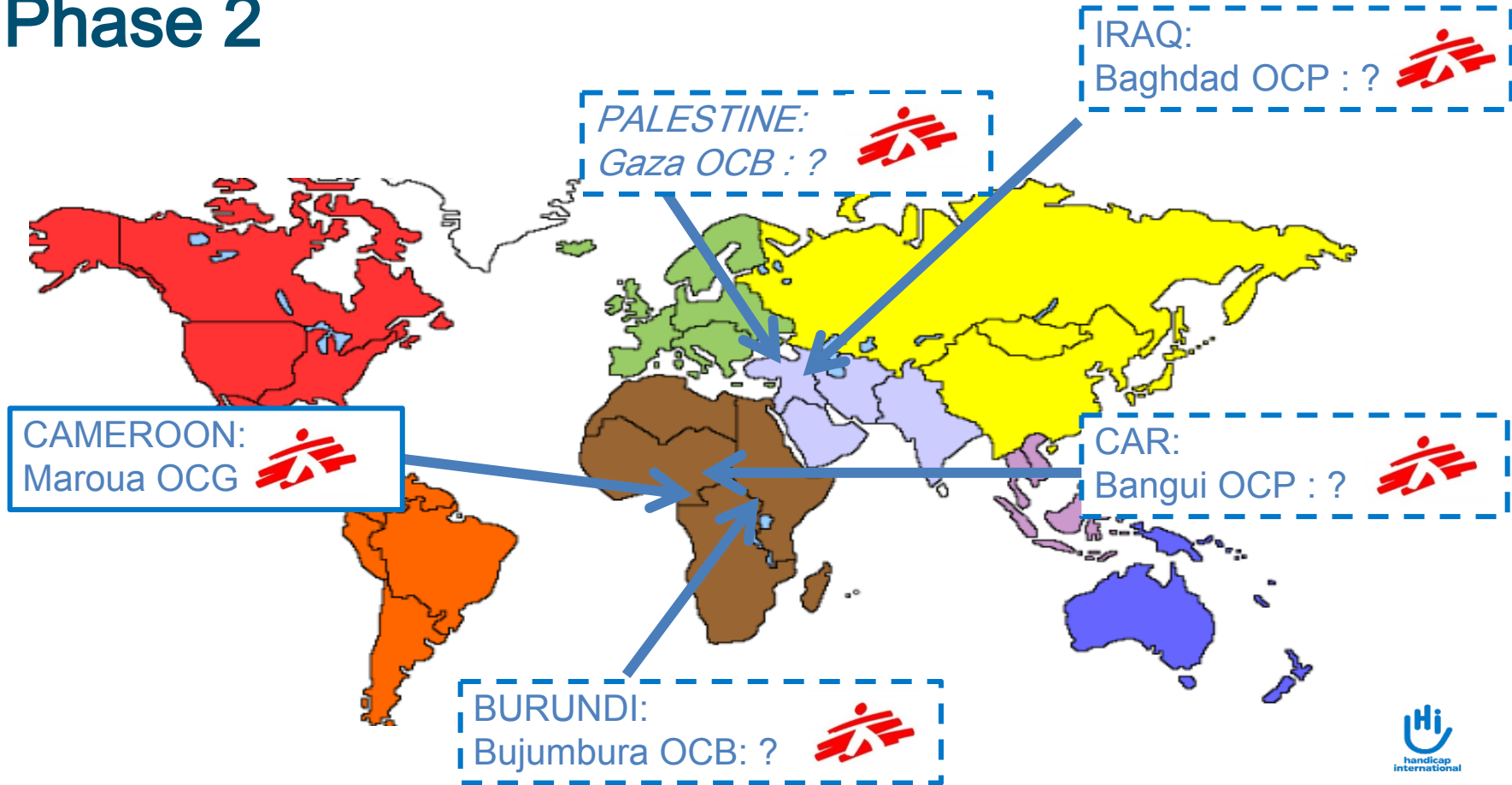


- Number of admitted patients  
- Number & types of interventions  
- Bed occupancy & LoS

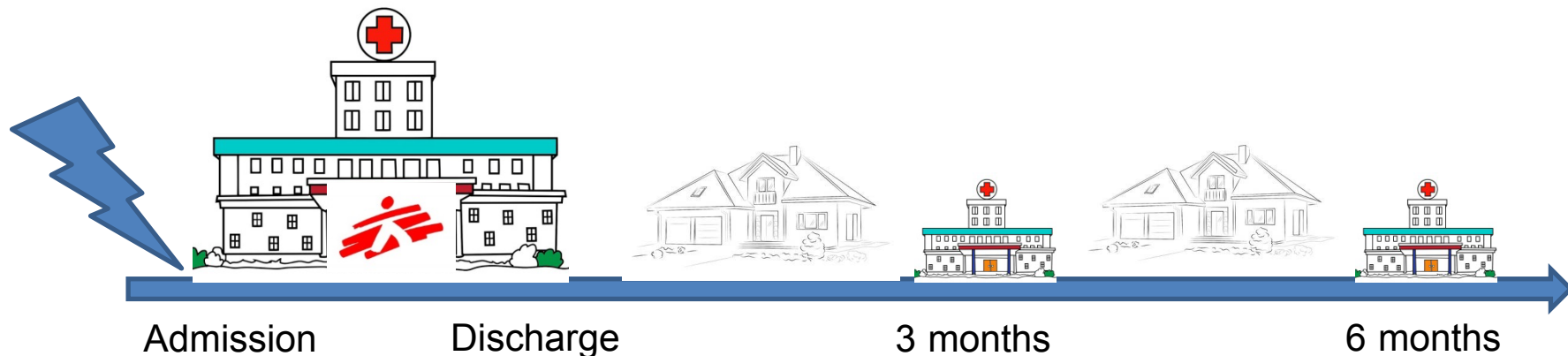
Figure № 1: Number of projects, new cases, and performed interventions, 2008 – 2018, per year.



# Phase 2



# Outcomes after trauma (using AIM-T v3)



$$\text{fx} \left\{ \begin{array}{l} \text{Severity} \\ \text{of injury} \end{array} \right. + \text{Patient} \\ \text{factors} + \text{Trauma system} \\ \text{performance} \left. \right\}$$



# Implications – Phase 3

Based on engagement strategy

\*Patient: Stimulate movement

\*Staff: Clinical guidance

& Promote early mobilisation and functional approach

\*Project: Monitoring outcomes & Benchmarking

\*Advocacy: Supporting holistic trauma care along continuum of care

-MSF trauma projects

-Contribute to the WHO Rehab 2030: inclusion of rehab in health systems

-Contribution of rehab to Sustainable Development Goals



# Acknowledgments



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