



OCB SAGE UNIT

Mission: HAITI

## 2014 – TABARRE – SURGICAL ACTIVITIES REPORT

### 1. Executive Summary<sup>1</sup> :

1.1. Patients <sup>2</sup> :	2649
1.2. Cases <sup>3</sup> :	4688
1.3. Procedures <sup>4</sup> :	5851
1.4. Mean age (years) <sup>5</sup> : (79356/2649)	30
1.5. Female (%) <sup>5</sup> : (596/2649)	22,5
1.6. All trauma (%) <sup>5</sup> : (2470/2649)	93,2
1.7. Violent trauma (%) <sup>5</sup> : (450/2649)	17,0
1.8. Caesarean section (%) <sup>5</sup> : (0/2649)	0,0
1.9. Post-op infection (%) <sup>5</sup> : (77/2649)	2,9%
1.10. Primary intervention (%) <sup>6</sup> : (2649/4688)	56,5
1.11. Emergent cases (%) <sup>6</sup> : (4688/4688)	100,0
1.12. Minor / wound surgery (%) <sup>6</sup> : (2033/4688)	43,4
1.13. Spinal anaesthesia (%) <sup>6</sup> : (1349/4688)	28,8
1.14. Spinal procedure for Caesarean section (%) <sup>7</sup> :	NA
1.15. Intra-operative mortality (%) <sup>6</sup> : (17/4688)	0,4
1.16. Occupancy rate (minutes/day) <sup>8</sup> : (408946/365)	1120

<sup>1</sup> This is a brief epidemiological summary of the project. It might be slightly different to the project description that follows as the denominators sometimes are not the same (e.g. Minor/wound surgery, Caesarean section).

<sup>2</sup> It reflects the number of new cases.

<sup>3</sup> It reflects the number of entrances to Operation Theatre as the number of anaesthetics.

<sup>4</sup> It reflects the number of procedures performed during an intervention (case).

<sup>5</sup> The denominator is the number of patients.

<sup>6</sup> The denominator is the number of cases

<sup>7</sup> There are considered the spinal and combined techniques.

<sup>8</sup> In Tabarre project there are available 3 Operating rooms.

**2. Introduction:**

Tabarre project is a complete MSF hospital structure exclusive dedicated to acute surgical and trauma care. The first surgical intervention was performed in February 2012. This at the beginning was linked to the devastating earthquake of 2010, and then, to the unstable context and the weak trauma capacity of health structures in the city. In a sort of sense, the Tabarre project can be seen as a continuation of Sarthe one. Therefore, the first internal fixation was performed few days after the opening of the project. There are in place high standards of care, even for MSF settings, and it is possible to perform complex orthopaedic procedures. The project has a performant Intensive Care Unit with capacity of invasive mechanical ventilation.

**3. Causes of intervention (new cases):**

In 2014 there were reported 2649 new cases / patients. From them, 450 (17,0%) were from violent trauma, 2020 (76,3%) accidental trauma, 1 (0,1%) and 178 (6,6%) from other pathology. In the following charts it can be seen their monthly trend and year distribution.

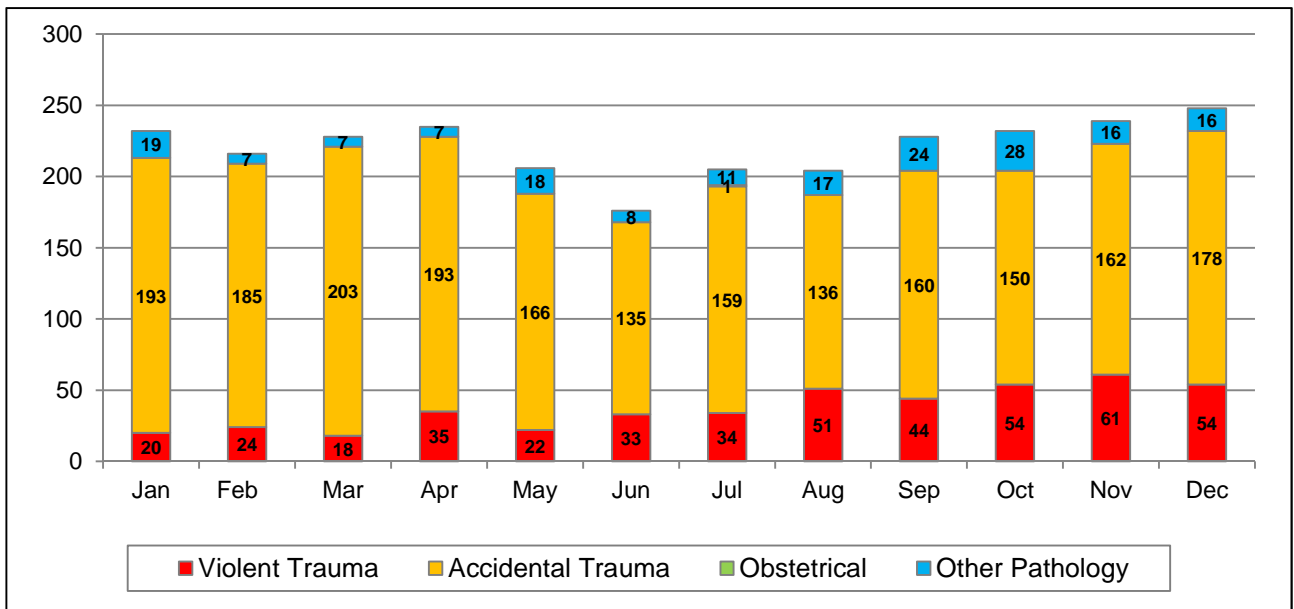


Chart 1: Causes of intervention (new cases), monthly, 2014.

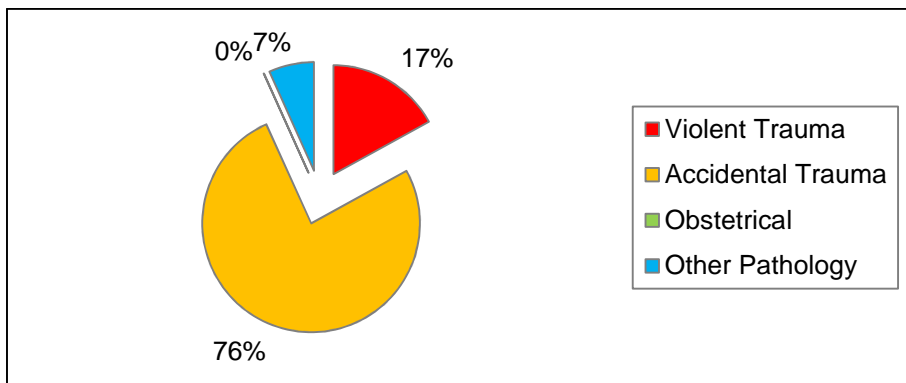


Chart 2: Causes of intervention (new cases), 2014.

#### 4. Performed anaesthetics

The number of performed anaesthetics shows us the quantity of entrances to the Operating Room. This number is higher than the causes of intervention, because the last takes into account only the new cases. In 2014 there were done 4688 anaesthetics. From them, 1349 (28,8%) were spinal, 2226 (47,5%) general, 716 (15,3%) intubated, 278 (5,9%) local, 43 (0,9%) regional, and 76 (1,6%) combined / others anaesthesia. In the following charts it can be seen their monthly trend and year distribution.

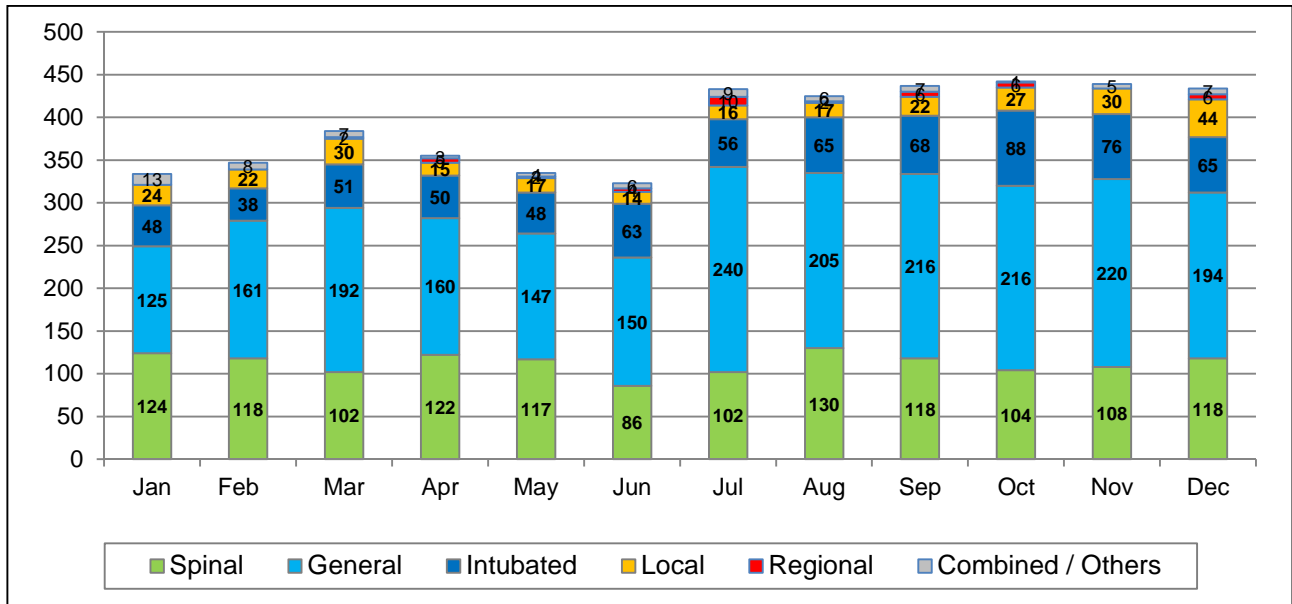


Chart 3: Types of anaesthesia, monthly, 2014.

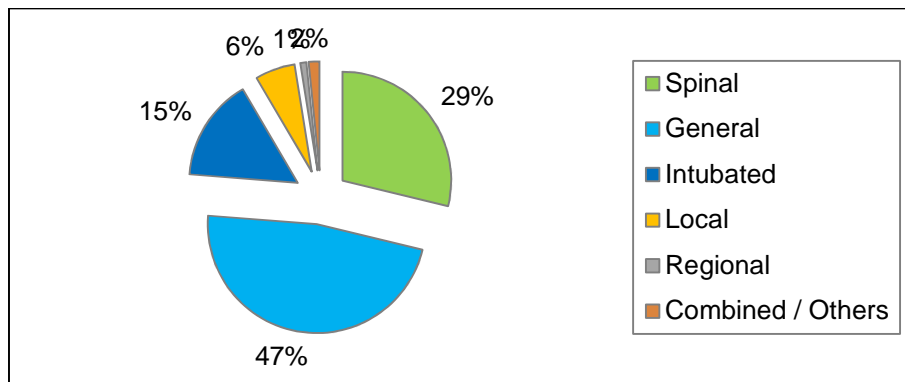


Chart 4: Types of anaesthesia, 2014.

Quality of anaesthesia care is mainly monitored by knowing the percentage of spinal anaesthesia performed for Caesarean sections. Since this is not an applicable indicator for Tabarre project, we only can describe what kinds of anaesthesia procedures were performed.

## 5. Performed procedures

During 2014 there were performed 5851 surgical procedures. This number is higher than the one of entrances to OR, because the MSF data collection system allows to encode up to 3 procedures in one patient. From this number, 503 (8,6%) were visceral surgery, 2554 (43,6%) orthopaedic / specialized, 11 (0,2%) other gynaecologic / obstetrical / urology, and 2783 (47,6%) minor / wound surgery. In the following charts it can be seen their monthly trend and year distribution.

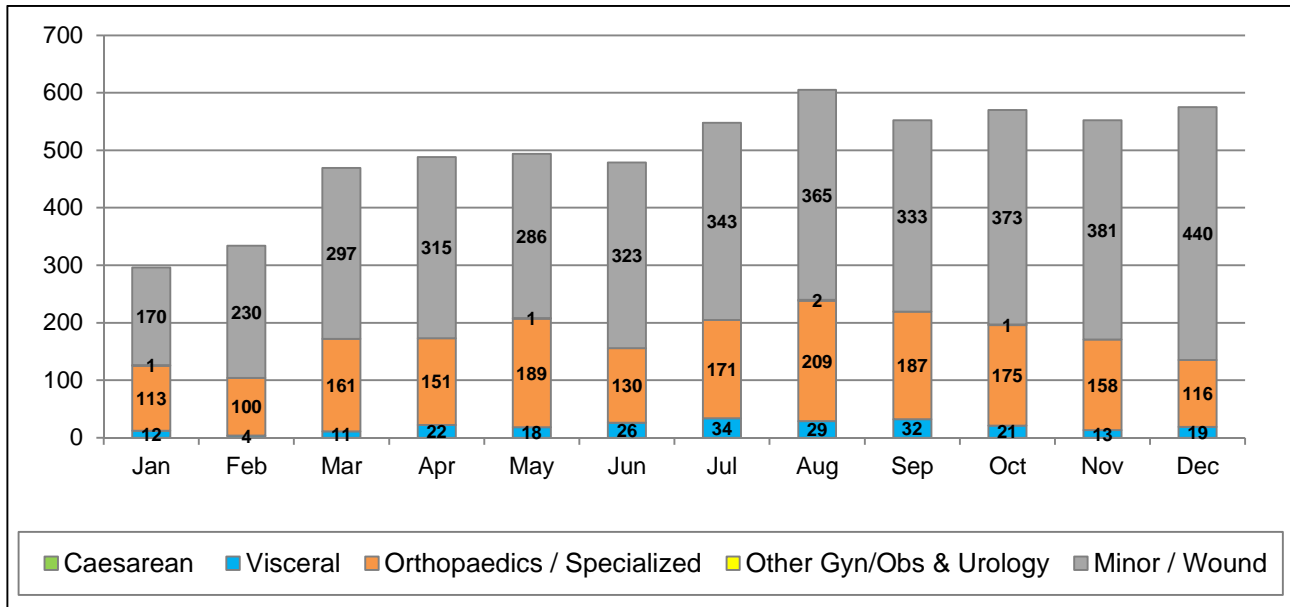


Chart 5: Types of surgical procedures, monthly, 2014.

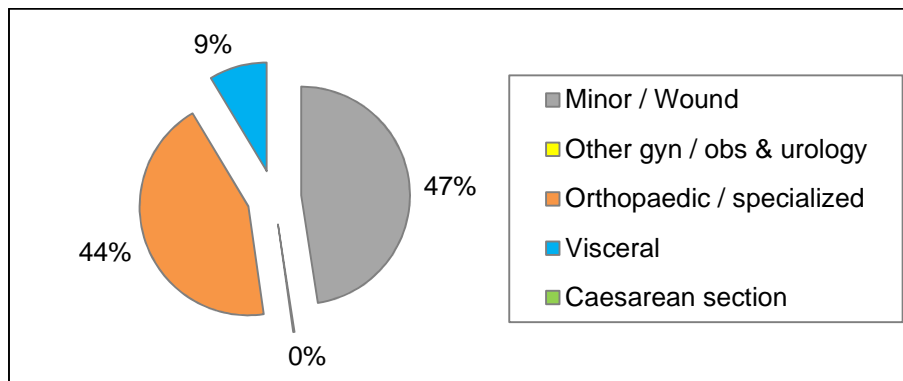


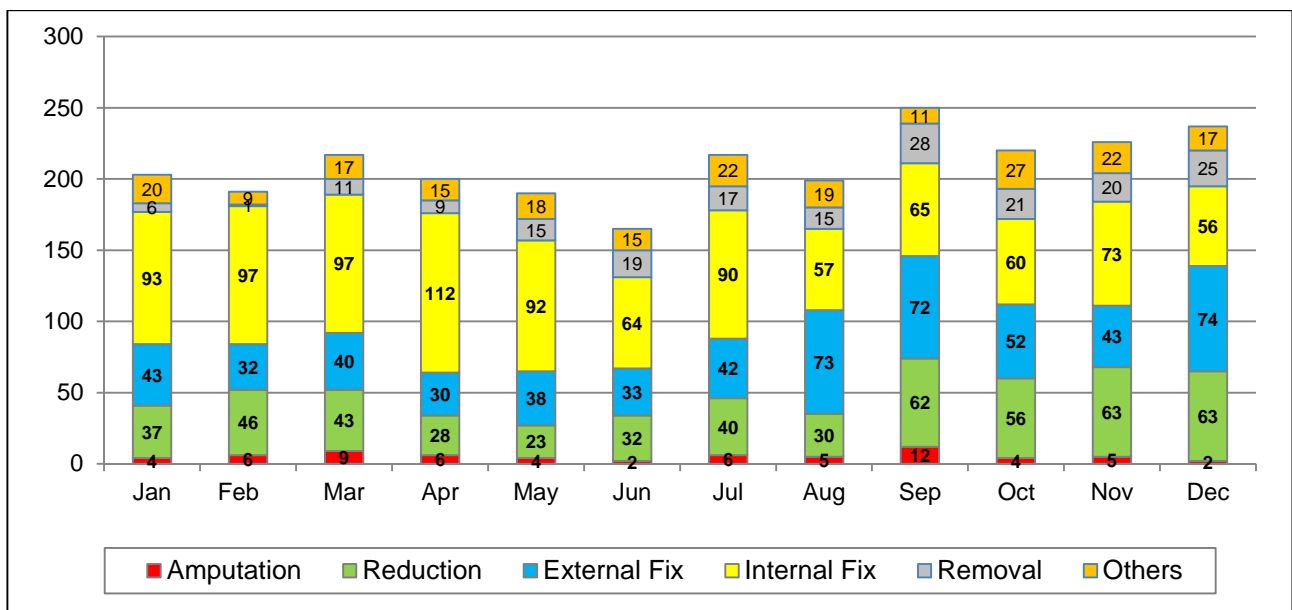
Chart 6: Types of surgical procedures, 2014.

*Remark:* The ratios of performed procedures are slight different from the Executive Summary (different denominators) due to the fact that in this chapter are taken into account all the procedures (5851), while in the Executive Summary only are taken into account the entrances to OR (4688). This is done to make possible the comparison between different projects.

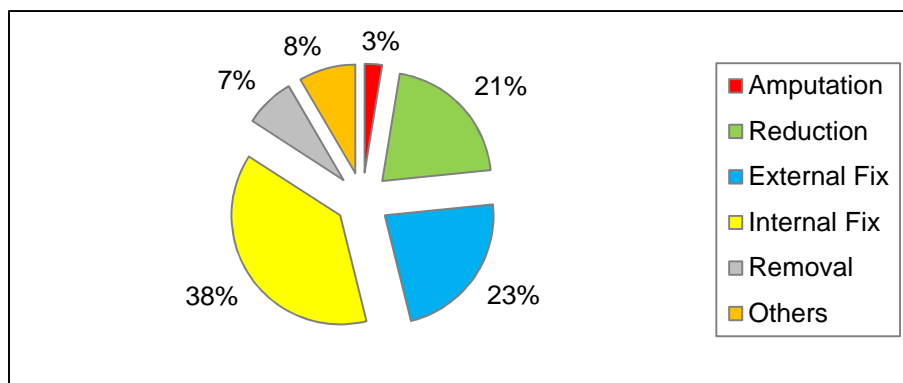
As a trauma centre, it is necessary to go more in detail in orthopaedic care: in 2014 there were performed 2515 orthopaedic procedures, with an increase of around 30% (2013, n=1944). In the following table, a summary of performed procedures is given, and it is done also a review of the orthopaedic procedures performed in the previous years. As a note, there are considered all the orthopaedic procedures (including Type 1, 2 and 3), due to frequent cases of multiple injuries. Also, in the following charts it can be seen their monthly trend and year distribution.

**Table 1: Types of orthopaedic procedures, 2014.**

	2014		2013		2012	
	Nº	%	Nº	%	Nº	%
Amputation	65	2,6	32	1,6	11	1,1
Reduction	523	20,8	343	17,6	119	11,8
External fixation	572	22,7	360	18,5	213	21,1
Internal fixation	956	38,0	904	46,6	468	46,4
Removal of fixators	187	7,5	165	8,5	89	8,8
Others	212	8,4	140	7,2	109	10,8
<b>TOTAL</b>	<b>2515</b>	<b>100,0</b>	<b>1944</b>	<b>100,0</b>	<b>1009</b>	<b>100,0</b>



**Chart 7: Types of orthopaedic procedures, monthly, 2014.**



**Chart 8: Types of orthopaedic procedures, 2014.**

## 6. Degree of urgency

In relation to the degree of urgency in 2014, from the 4688 entrances to the Operating room, 2018 (43,0%) were urgent cases, and 2670 (57,0%) delayed. Thus, emergent cases (urgent and delayed) were 100,0% of the cases. In the following charts it can be seen their monthly trend and year distribution.

It is very important to understand that trauma causes for intervention are not only life-threatening and in need of an urgent intervention, but also, there are a lot of them that can be delayed. At the same time, trauma causes for intervention are linked with a big amount of needed re-interventions.

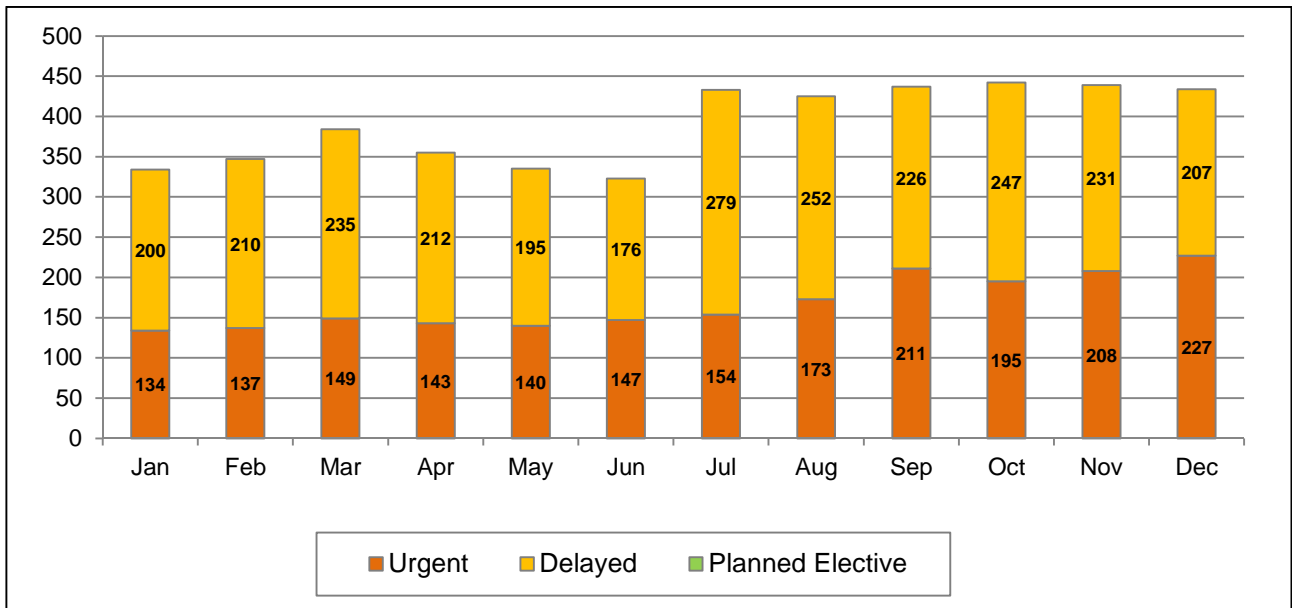


Chart 9: Degree of urgency, monthly, 2014.

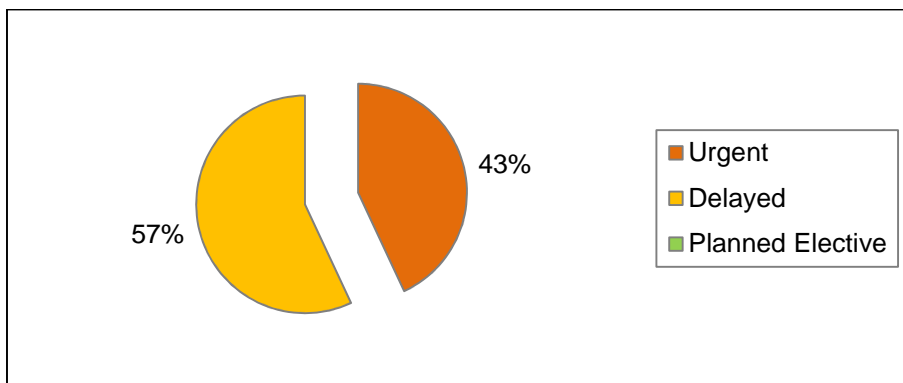


Chart 10: Degree of urgency, 2014.

*Remark:* every re-intervention (planned or unplanned) is encoded as delayed intervention because the surgery should be performed anyway: the patient cannot be discharged home without this intervention.

## 7. Order of intervention

During 2014, from the 4688 entrances to the Operating room, 2649 (56,5%) were first or primary interventions, and 2039 (43,5%) planned re-interventions. There were not recorded unplanned re-interventions. In the following charts it can be seen their monthly trend and year distribution.

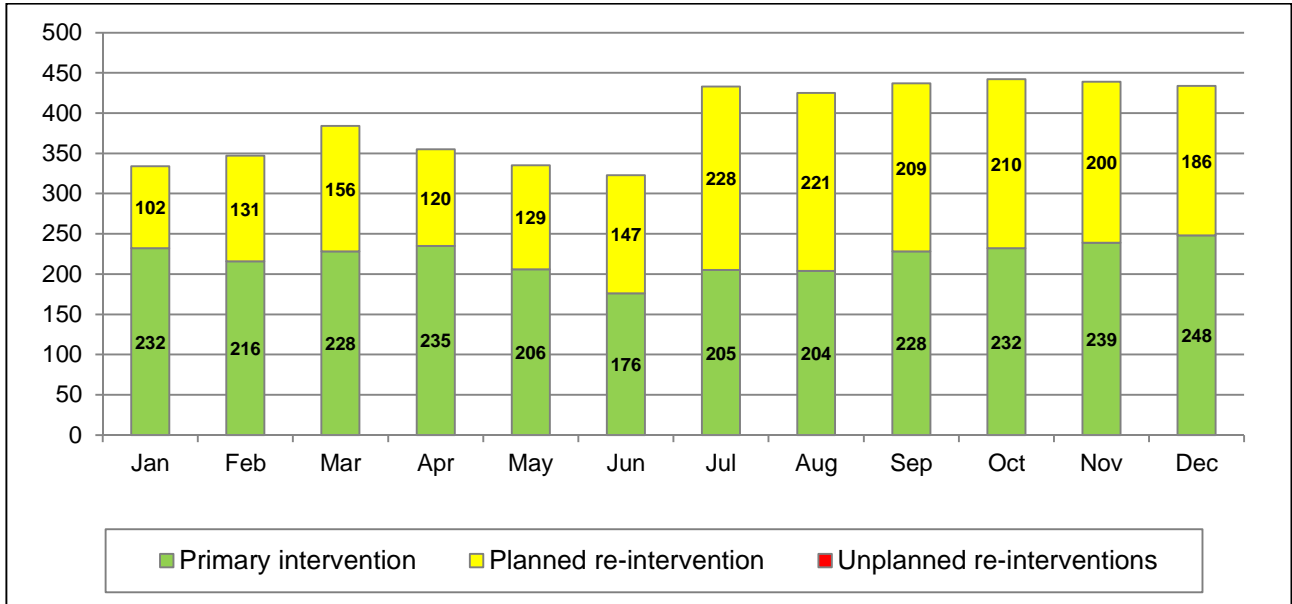


Chart 11: Order of intervention, monthly, 2014.

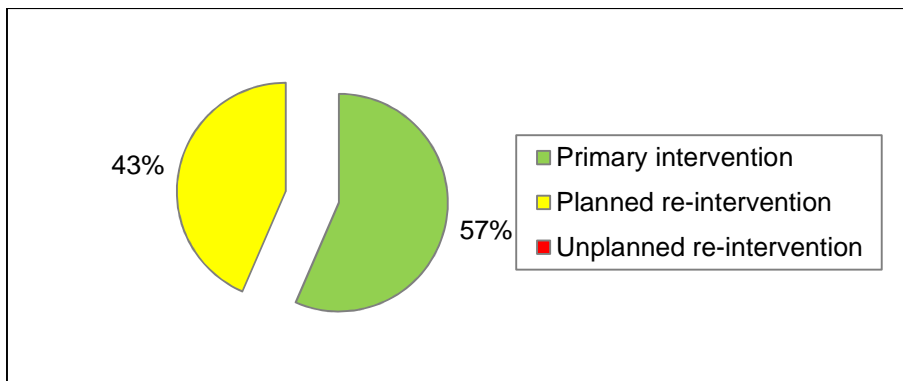


Chart 12: Order of intervention, 2014.

## 8. Patients demography

From the 2649 patients who underwent a surgical intervention, 596 (22,5%) were female, and 2053 (77,5%) male.

The patients' age average was of 30 years. The main age average for female was of 32, and for male of 29 years. In the following chart it can be seen the age distribution of the patients.

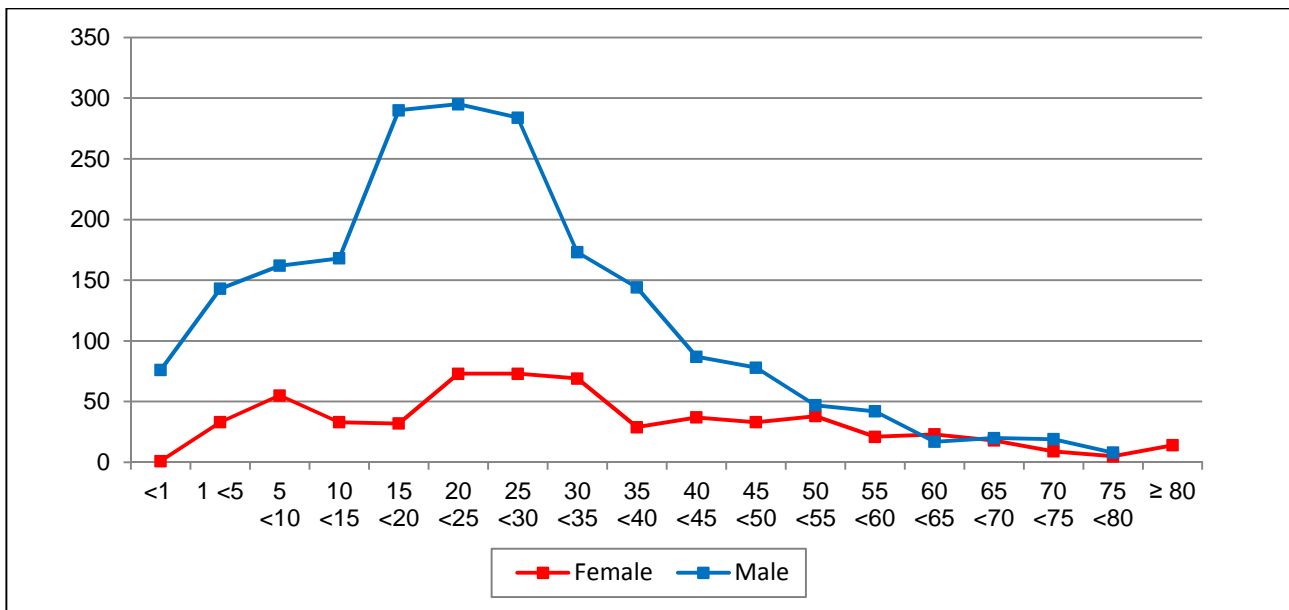


Chart 13: Age distribution, by sex, 2014.

## 9. Other ratios

### 9.1. Patient physical status

In relation to the physical status of the patient (ASA classification), from the 4688 entrances to the OR, 3307 (70,5%) were ASA 1 (patient in apparent good health notwithstanding his surgical problem), 1227 (26,2%) ASA 2 (patient with mild systemic disease), 141 (3,0%) ASA 3 (patient with systemic disease severe enough to limit activity but not incapacitating), and 13 (0,3%) ASA 4 (patient with severe incapacitating disease that is a constant threat to life).

### 9.2. Intra-operative mortality

In 2014 there were reported 17 cases of intra-operative mortality, resulting in a ratio of 0,4%. For OCB purposes, intra-operative mortality is defined as: any death, regardless the cause occurring during the induction of anaesthesia, surgical intervention and immediate recovery period<sup>9</sup>.

### 9.3. Post-operative site infections

During 2014 there were reported 77 post-operative site infections, with a ratio of 2,9%. However, this indicator should be followed very carefully as several biases are present: it is not possible every time to follow the post-operative patients until 30 days after surgery (they are discharged before), there might be cases of non-notification, and case definitions might be understood differently from surgeon to surgeon. At the same time, internal fixation procedures should be followed until 1 year after the intervention (ideally), a very difficult task for the team because patients might not return to the hospital or might not be reachable even through telephone calls.

<sup>9</sup> The immediate recovery period is understood as the time the patient is monitored in the recovery room. If there is not a recovery room available, any death that occurs in the immediate post-anaesthesia recovery period out of the Operating department cannot be considered as intra-operative one, due to the presence of other extra factors (ex. quality of nursing care in the hospitalisation ward).



## 10. Project review

Thanks to the responsible work in the field, in OCB files there is available data of the project since the beginning of surgical activities, in February 14<sup>th</sup>, 2012. In the following chart it is given a review of the number of entrances.

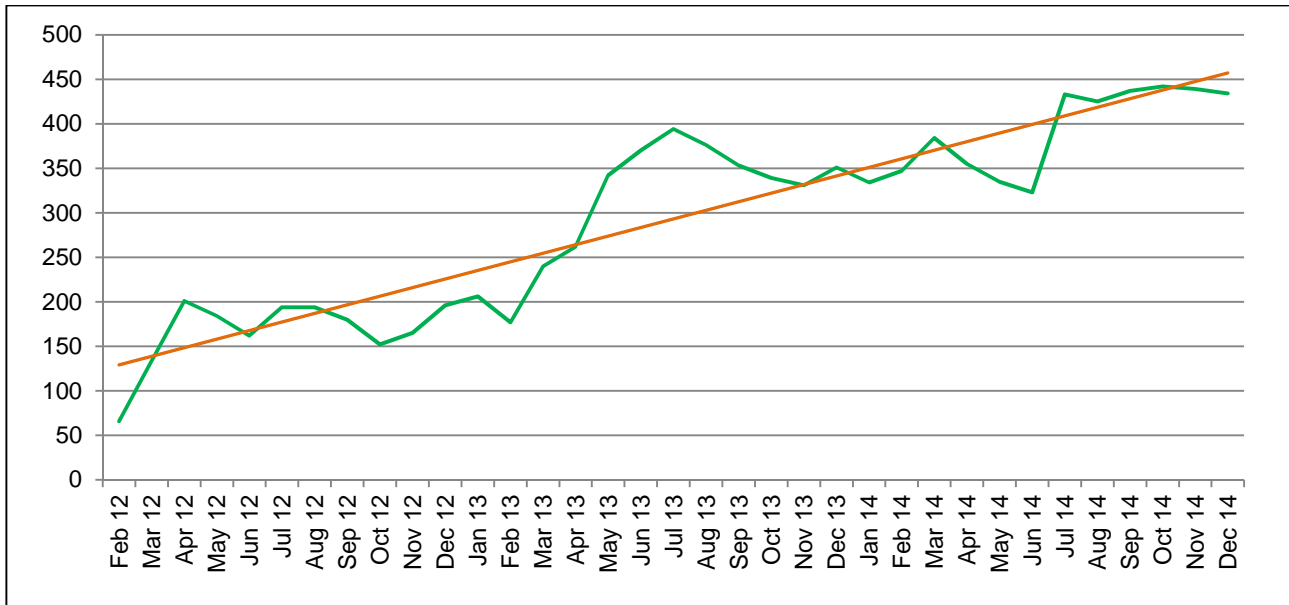


Chart 14: Number of cases from February 2012 to December 2014, monthly.

Since the beginning of the project, it is possible to see a non-stop and steadily increase of activities. The trend is irregular but the projection is clear, and there are not present cyclic patterns. 4688 cases means an increase of around 25% in relation to the previous year (2013, n=3741). A significant increase of activities is seen in the second half of 2014.

This important increase of cases can be explained by the closure of activities of the OCP Drouillard project in Port-au-Prince. However, in order to make face correctly to the possible increase of admissions to Tabarre project, the admission criteria were changed and reduced. In the next table is a summary of the differences between the admission criteria before and afterwards July 1<sup>st</sup>, 2014.

Table 2: Admission criteria to Tabarre hospital, 2014.

Type of pathology	Criteria	Before July 1 <sup>st</sup> , 2014	After July 1 <sup>st</sup> , 2014
Non trauma	Acute surgical abdomen	Yes	Yes
	Incarcerated / strangulated hernias	Yes	Yes
	Bowel obstruction	Yes	Yes
	Testicular torsion	Yes	Yes
Trauma	Open fractures	Yes (<72 hours)	Yes (<24 hours)
	Closed fractures of arm, forearm and leg	Yes (<72 hours)	No
	Closed fractures of thigh	Yes (<72 hours)	Yes (<24 hours)
	Pelvis fracture	Yes (<72 hours)	Yes (<24 hours)
	Paediatric patients <12 years old	Yes (<72 hours)	Yes (<24 hours)
	Non-orthopaedic trauma (surgical cases)	Yes	Yes

The changes in the admission criteria to hospitalisation and the increase of activities could mean that the project is only managing very complicated cases.

In the following chart it is given a review of the causes of intervention (only new cases) for the last three years (2012 – 2014), and their trends can be summarized as follows:

- Regarding new cases, there is an increase in the incidence in around 14% (2014, n=2649; 2013, n=2317). This doesn't correlate directly with the increase of number of entries to the OR. The fact that during the second half of 2014 there were not managed other closed fractures than the ones of the thigh (femur) can mean that in the project there are caring more of open fractures, which need more re-interventions.
- Violent trauma as cause of surgical interventions shows a remarkable increase of its incidence during the second half of 2014, almost twice. If in 2013 there were recorded around 27 new cases per month, in the first semester of 2014 there were around 25 per month, and in the second semester, already 50 new cases per month. Again, this can be explained by the change in admission criteria, as violent trauma is more linked with open fractures.
- Accidental trauma, in the other hand, shows a different trend than the ones of violent trauma. During 2013, it was recorded an incidence of around 152 new cases per month. During the first semester of 2014 there were around 179, and in the second semester there is a decrease of new cases up to around 158 cases per month. This trend can also be explained by the changes in the admission criteria for hospitalisation of the project: accidental trauma can be present with closed fractures.
- Obstetrical causes are not present in this project, following the operational strategy.
- Other pathologies (non-trauma) as cause of surgical intervention / hospitalisation show a regular trend during the last two years. However, during the second semester of 2014 it is recorded an increase of activities (from 14 to 18 new cases per month). The low incidence doesn't make possible a correct analysis of the trend.

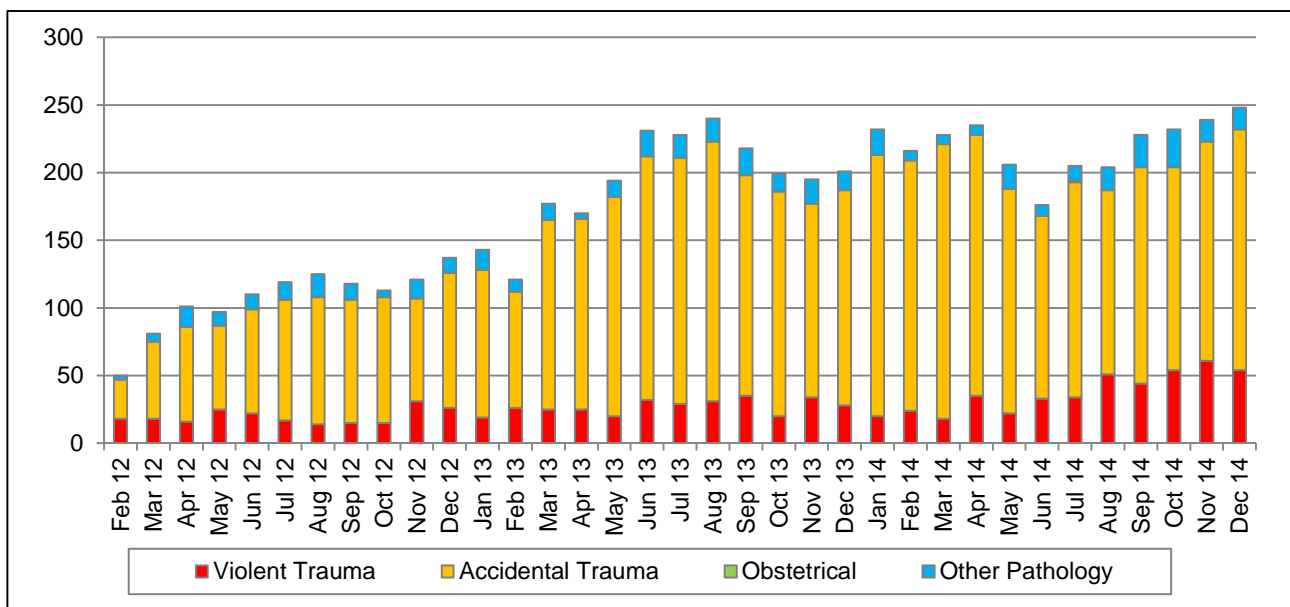


Chart 15: Causes of intervention (new cases), from February 2012 to December 2014, monthly.

The type of anaesthesia management is directly linked to the performed surgical procedures. In that sense, a sole analysis of this trend doesn't give valuable information. At the same time, for the analysis of quality in anaesthesia, it is better to analyse the ratio of spinal procedures for Caesarean section. As in the project there are not performed this kind of interventions, it is not possible to make any review. The remarkable low ratio of intra-operative mortality also is a proxy to evaluate the anaesthesia management.

The fact that there is a high amount of surgeries aside the ones of Type 1 (n=1163) reflects the complexity of the wounded patients arriving to the project – multiple injured patients. However, as in the Type 1 is written the most important and life-threatening morbidity, it is possible anyway to make some analysis. In the following chart it is given the trend of performed procedures<sup>10</sup>. From the analysis, there can be found the following characteristics:

- Orthopaedic surgery shows an increase in its incidence of around 24% (2014, n=2165; 2013, n=1746) that can be explained by the overall increase of the activities in the project. Also it is important to disaggregate the year of 2014: during the first trimester there were performing around 170 procedures per month, and during the second, there were in a range of 190.
- Visceral surgery shows also an increase in its incidence, around 14% (2014, n=479; 2013, n=420). This increase can be explained by the fact of the increase of violent trauma causes of surgical intervention / hospitalisation, where abdominal injuries are also expected to be more frequent. As it was explained before, the increase of violent trauma can also be explained by the change of admission criteria for hospitalisation. This can be clearer when we disaggregate the data: during the first semester of 2014 there were around 30 cases per month, and during the second semester there were around 50 per month.
- Minor / wound surgery also clearly reflects the changes in the admission criteria. Overall, there is an increase in its incidence of around 30% (2014, n=2033; 2013, n=1568). When looking in the data of 2014, the first semester accounted for 869 cases, or around 145 cases per month (following the same trend of the previous year), and the second semester accounted for 1164, or around 195 cases per month.

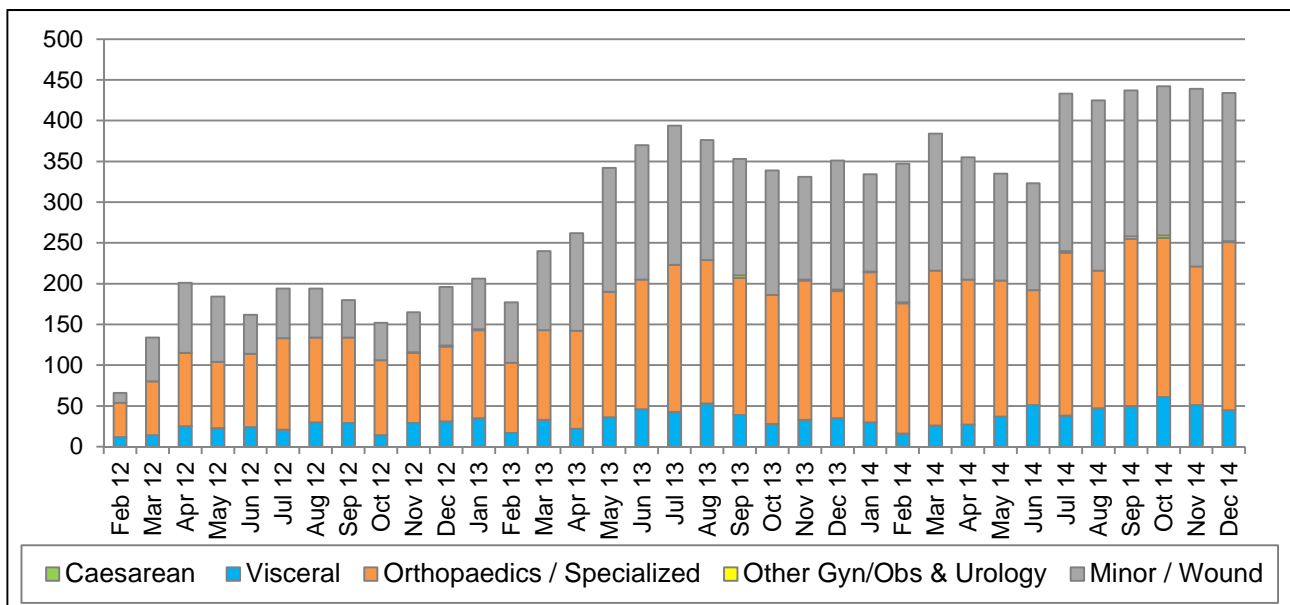


Chart 16: Types of procedures, from February 2012 to December 2014, monthly.

<sup>10</sup> There are only considered the performed procedures Type 1 of the data collection tool, in order to be comparable with all the other OCB surgical projects.

As a hospital performing orthopaedic procedures, it is relevant to analyse them through the project development. In the following chart it is given the trend of performed procedures. From the analysis, it is possible to find the following:

- External fixation procedures show an increase in 2014 of around 60%, in comparison to the previous year (2014, n=572; 2013, n=360). If during 2013, the average of internal fixation procedures was of around 30 per month, during the first semester of 2014 was already on 36 per month (perhaps due to the expected increase of activities. However, during the second semester of 2014 there were performed around 60 per month, that means a two times increase in relation to the previous year.
- Internal fixation procedures, in the other hand, show a different trend. Analysing the overall data, there is a discrete increase of procedures, around 6% (2014, n=956; 2013, n=904) that anyway is statistical significant. At the same time, if during 2013 the average of procedures was of around 75 per month, during the first semester of 2014 there notably increased to a level of around 90 per month. However, during the second semester of 2014 is noticed a decrease of procedures up to around 65 per month.

The important changes in the performed external and internal fixation procedures is a direct reflect of the changes in the admission criteria to hospitalisation. These data should be considered when planning next orders for material supply.

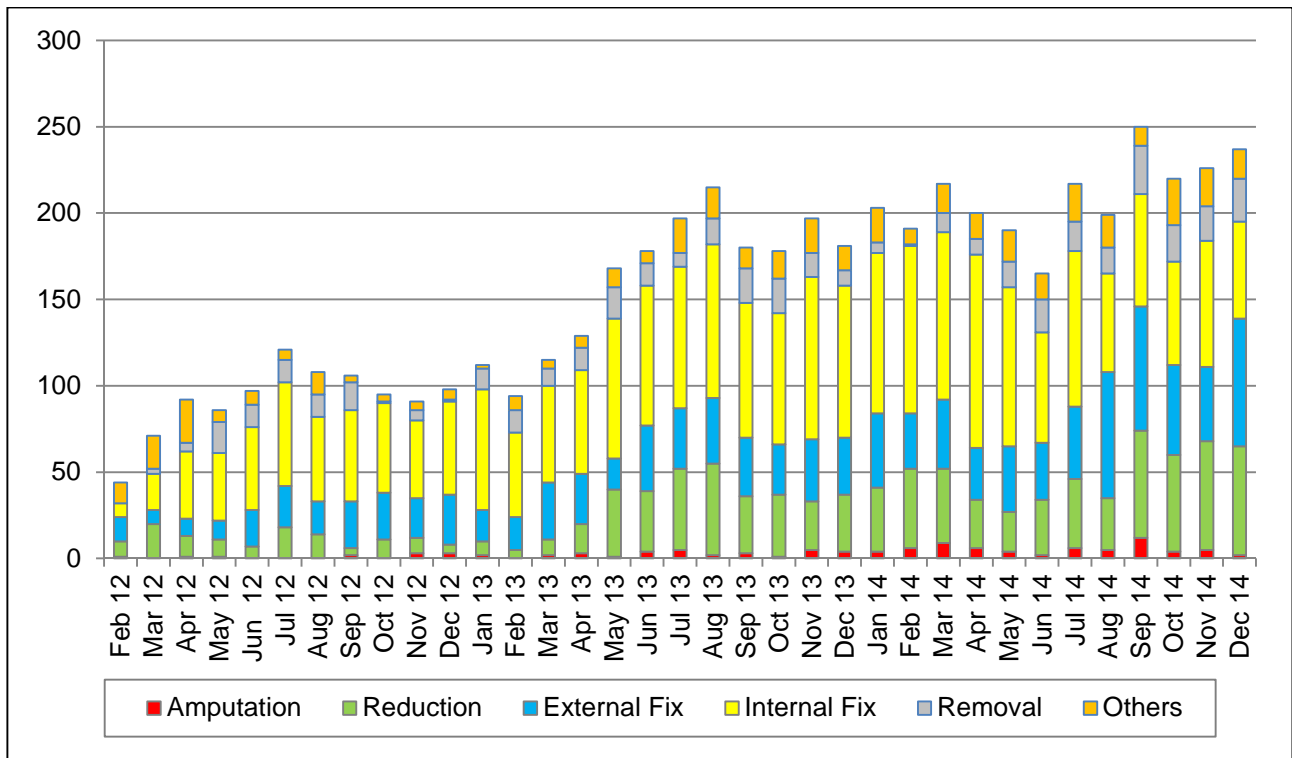


Chart 17: Types of orthopaedic procedures, all, from February 2012 to December 2014, monthly.

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