



OCB SAGE UNIT

Mission: **AFGHANISTAN**

2014 – KUNDUZ – SURGICAL ACTIVITIES REPORT

1. Executive Summary¹ :

1.1. Patients ² :	1966
1.2. Cases ³ :	4241
1.3. Procedures ⁴ :	5962
1.4. Mean age (years) ⁵ : (49829/1966)	25
1.5. Female (%) ⁵ : (296/1966)	15,1
1.6. All trauma (%) ⁵ : (1962/1966)	99,8
1.7. Violent trauma (%) ⁵ : (691/1966)	35,1
1.8. Caesarean section (%) ⁵ : (0/1966)	0,0
1.9. Post-op infection (%) ⁵ : (127/1966)	6,4
1.10. Primary intervention (%) ⁶ : (1966/4241)	46,4
1.11. Emergent cases (%) ⁶ : (4241/4241)	100,0
1.12. Minor / wound surgery (%) ⁶ : (2690/4241)	63,4
1.13. Spinal anaesthesia (%) ⁶ : (599/4241)	14,1
1.14. Spinal procedure for Caesarean section (%) ⁷ :	NA
1.15. Intra-operative mortality (%) ⁶ : (8/4241)	0,2
1.16. Occupancy rate (minutes/day) ⁸ : (269350/365)	738

¹ 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).

² It reflects the number of new cases.

³ It reflects the number of entrances to Operation Theatre as the number of anaesthetics.

⁴ It reflects the number of procedures performed during an intervention (case).

⁵ The denominator is the number of patients.

⁶ The denominator is the number of cases

⁷ There are considered the spinal and combined techniques.

⁸ In Kunduz project there are available 3 Operating rooms.

2. Introduction:

Kunduz project is a complete MSF hospital structure exclusive dedicated to trauma care where the first surgical intervention was performed in August 2011. This is linked to the unstable context and the weak trauma capacity of the regional hospital in the city. High standards for MSF settings are in place in order to perform complex orthopaedic procedures, including internal fixation implemented in January 2013. In order to respond for seriously trauma cases and mass casualty incidents there is also a high standard Intensive Care Unit with capacity of invasive mechanical ventilation.

3. Causes of intervention (new cases):

In 2014 there were reported 1966 new cases / patients. From them, 691 (35,2%) were from violent trauma, 1271 (64,6%) accidental trauma, and 4 (0,2%) from other pathology. In the following charts it can be seen their monthly trend and year distribution.

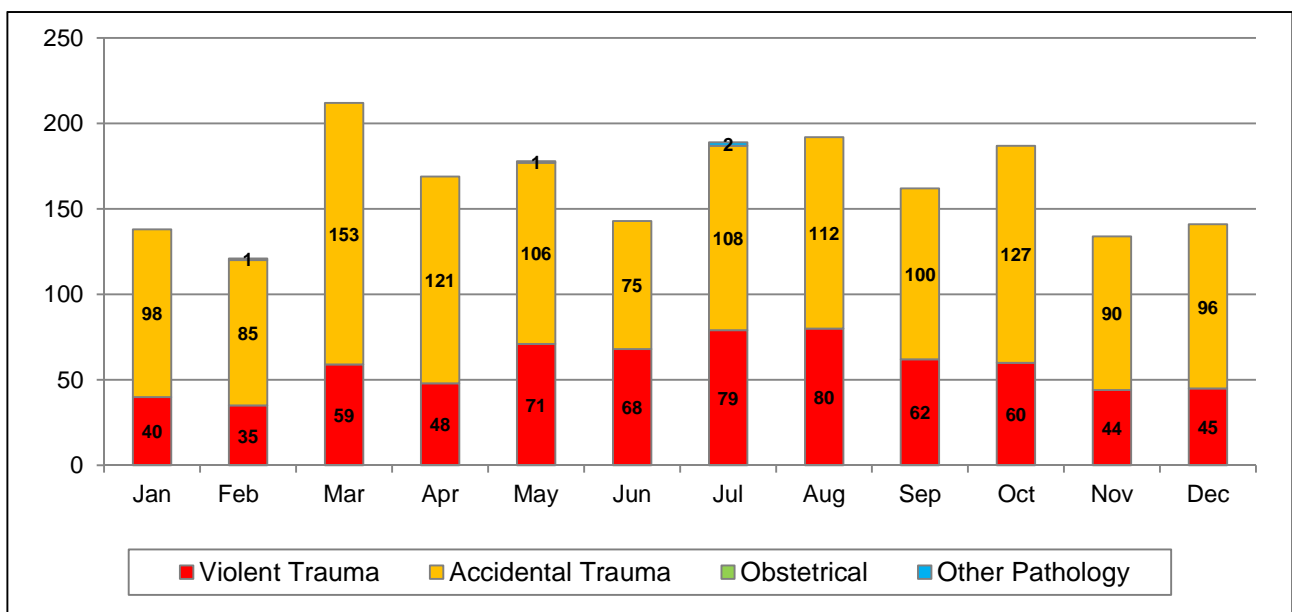


Chart 1: Causes of intervention (new cases), monthly, 2014.

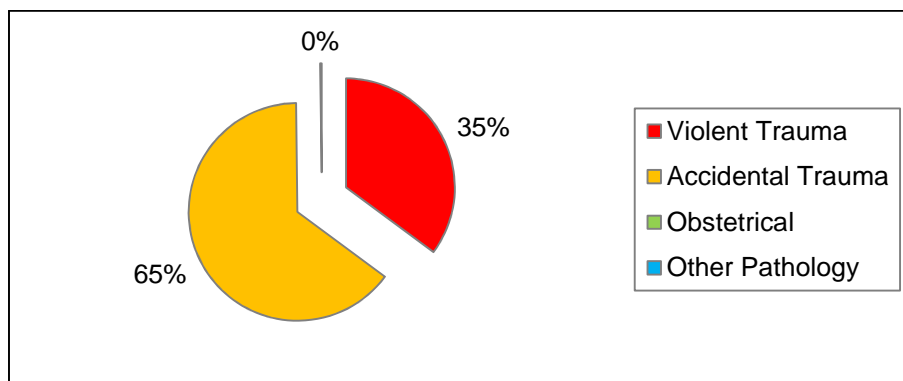


Chart 2: Causes of intervention (new cases), 2014.

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 4241 anaesthetics. From them, 599 (14,1%) were spinal, 2579 (60,8%) general, 657 (15,5%) intubated, 207 (4,9%) local, 47 (1,1%) regional, and 152 (3,6%) combined / others anaesthesia. In the following charts it can be seen their monthly trend and year distribution.

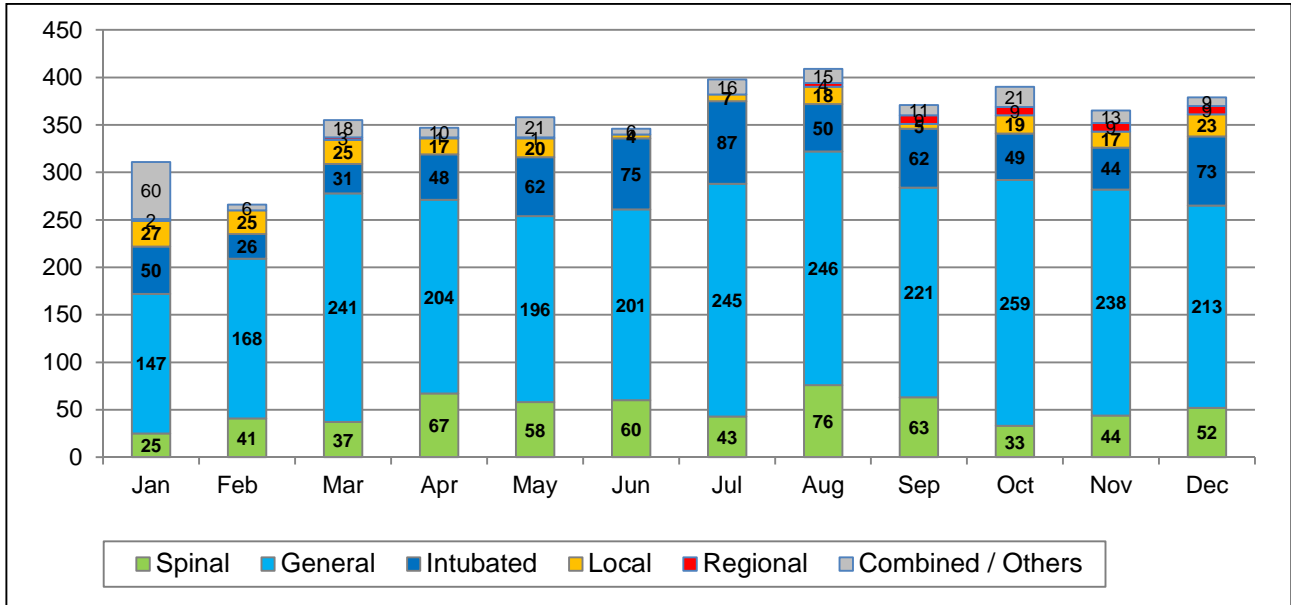


Chart 3: Types of anaesthesia, monthly, 2014.

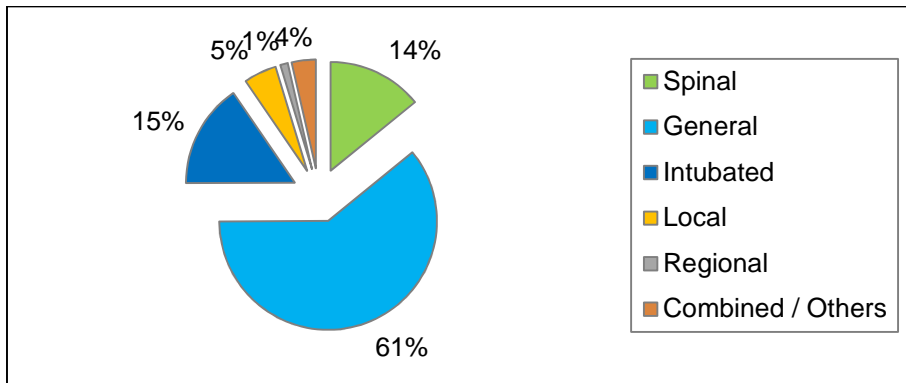


Chart 4: Types of anaesthesia, 2014.

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 Kunduz project, we only can describe what kinds of anaesthesia procedures were performed.

5. Performed procedures

During 2014 there were performed 5962 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, 241 (4,0%) were visceral surgery, 1860 (31,2%) orthopaedic / specialized, 5 (0,1%) other gynaecologic / obstetrical / urology, and 3856 (64,7%) minor / wound surgery. In the following charts it can be seen their monthly trend and year distribution.

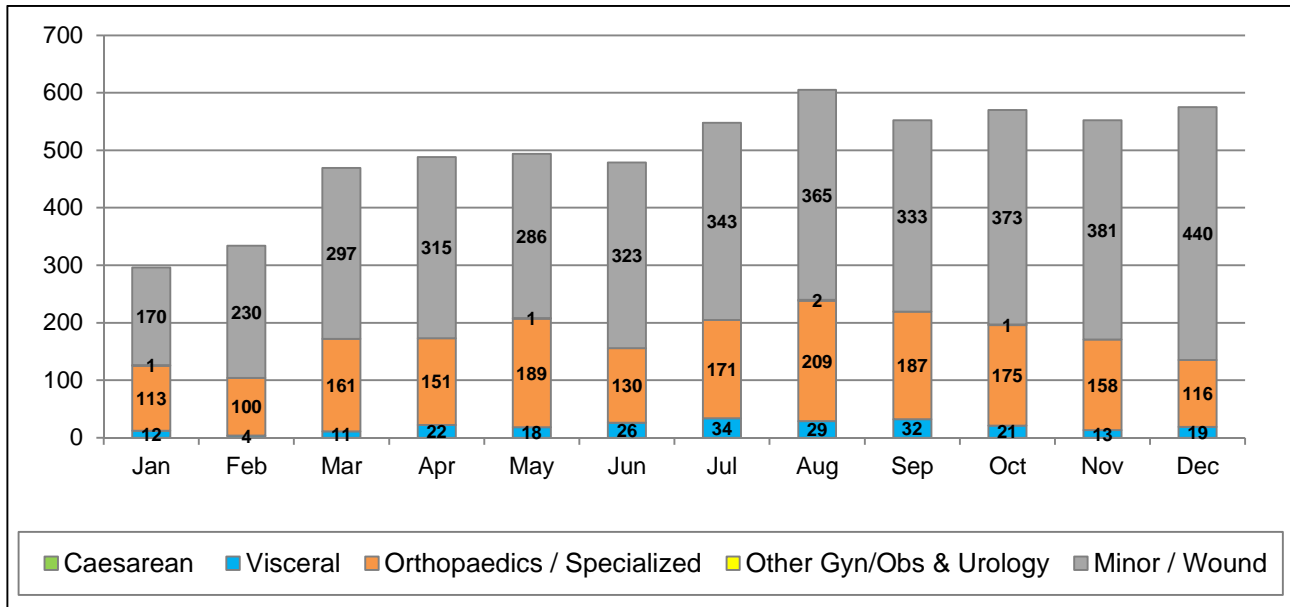


Chart 5: Types of surgical procedures, monthly, 2014.

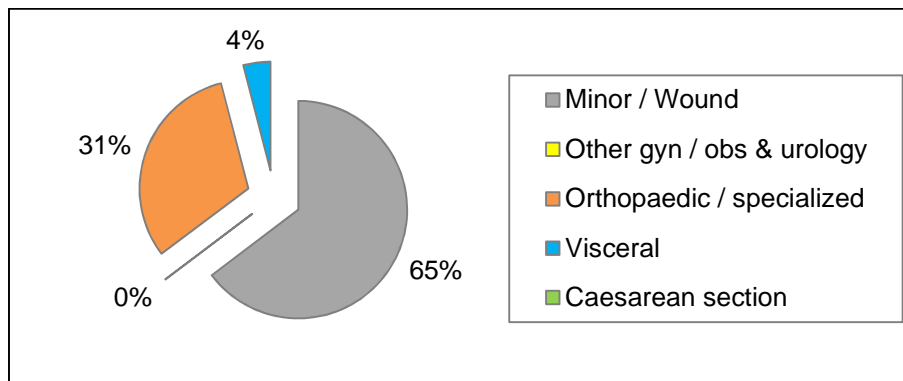


Chart 6: Types of surgical procedures, 2014.

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 (5962), while in the Executive Summary only are taken into account the entrances to OR (4241). 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 1772 orthopaedic procedures, with an increase of around 16% (2013, n=1528). 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		2011	
	Nº	%	Nº	%	Nº	%	Nº	%
Amputation	121	6,8	85	5,6	62	4,5	5	1,6
Reduction	448	25,3	438	28,7	800	58,0	214	69,3
External fixation	412	23,3	332	21,7	213	15,5	63	20,4
Internal fixation	672	37,9	485	31,7	8	0,6	0	0,0
Removal of fixators	64	3,6	114	7,5	142	10,3	5	1,6
Others	55	3,1	74	4,8	153	11,1	22	7,1
TOTAL	1772	100,0	1528	100,0	1378	100,0	309	100,0

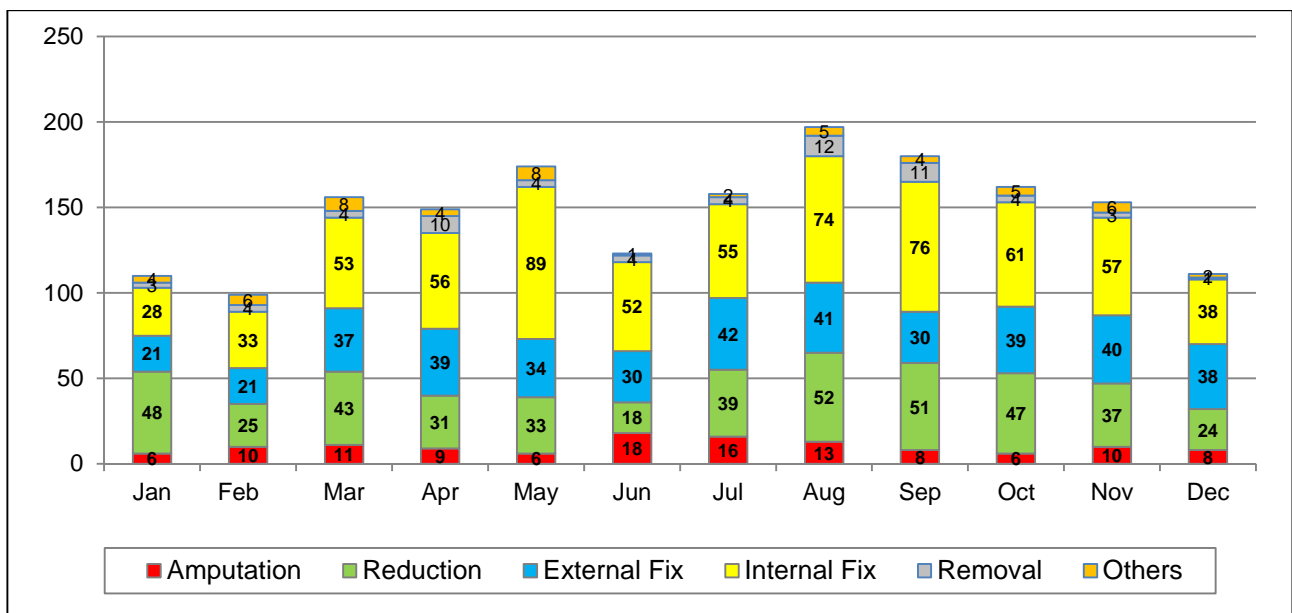


Chart 7: Types of orthopaedic procedures, monthly, 2014.

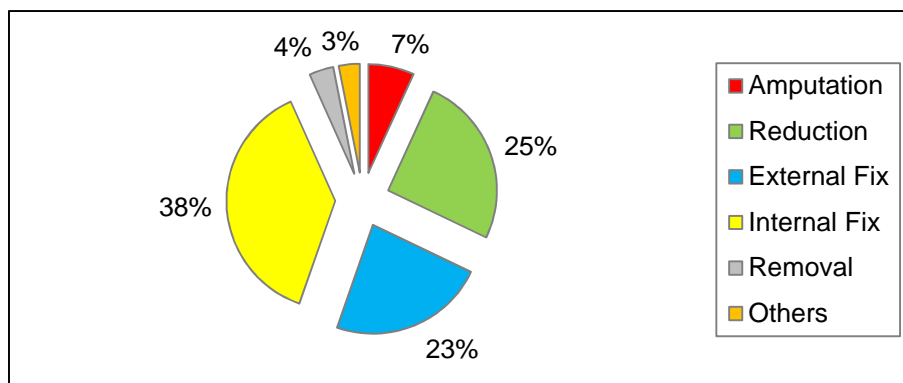


Chart 8: Types of orthopaedic procedures, 2014.

6. Degree of urgency

In relation to the degree of urgency in 2014, from the 4241 entrances to the Operating room, 1311 (30,9%) were urgent cases, and 2930 (69,1%) 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.

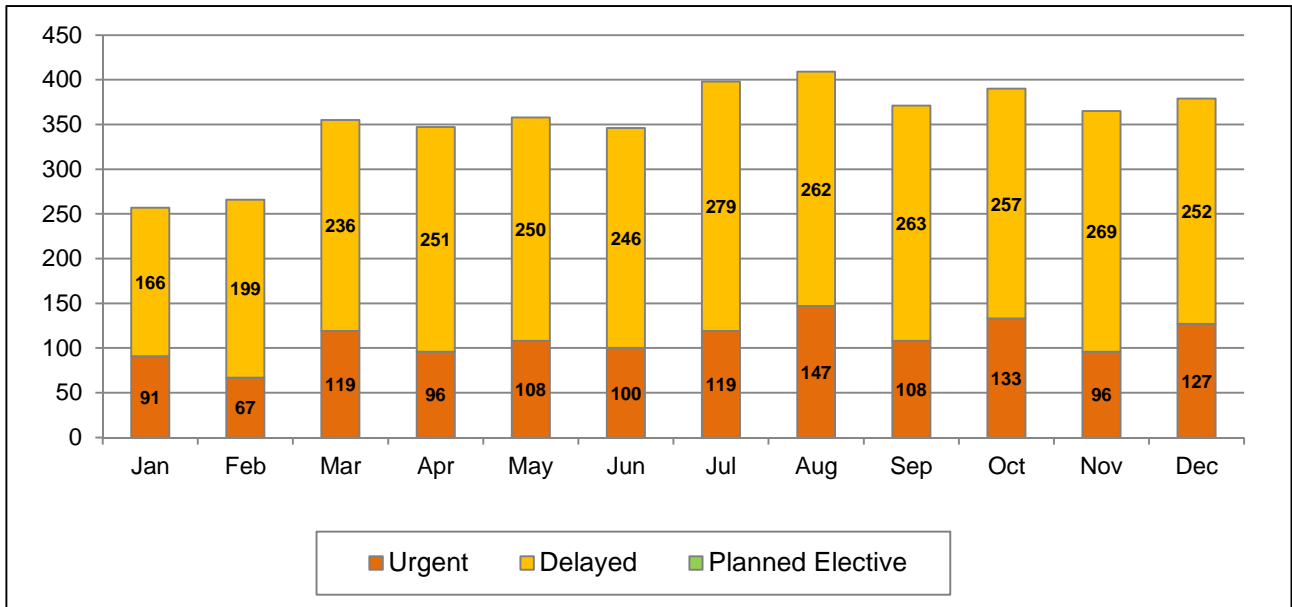


Chart 9: Degree of urgency, monthly, 2014.

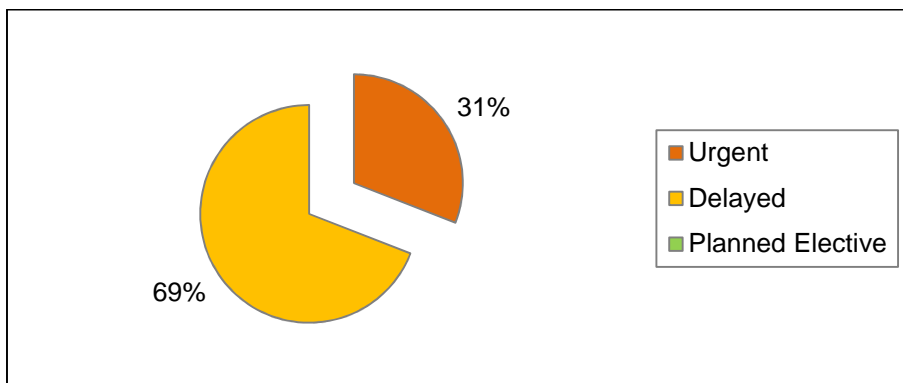


Chart 10: Degree of urgency, 2014.

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 4241 entrances to the Operating room, 1966 (46,4%) were first or primary interventions, and 2275 (53,6%) planned re-interventions. There were not recorded unplanned re-interventions. In the following charts it can be seen their monthly trend and year distribution.

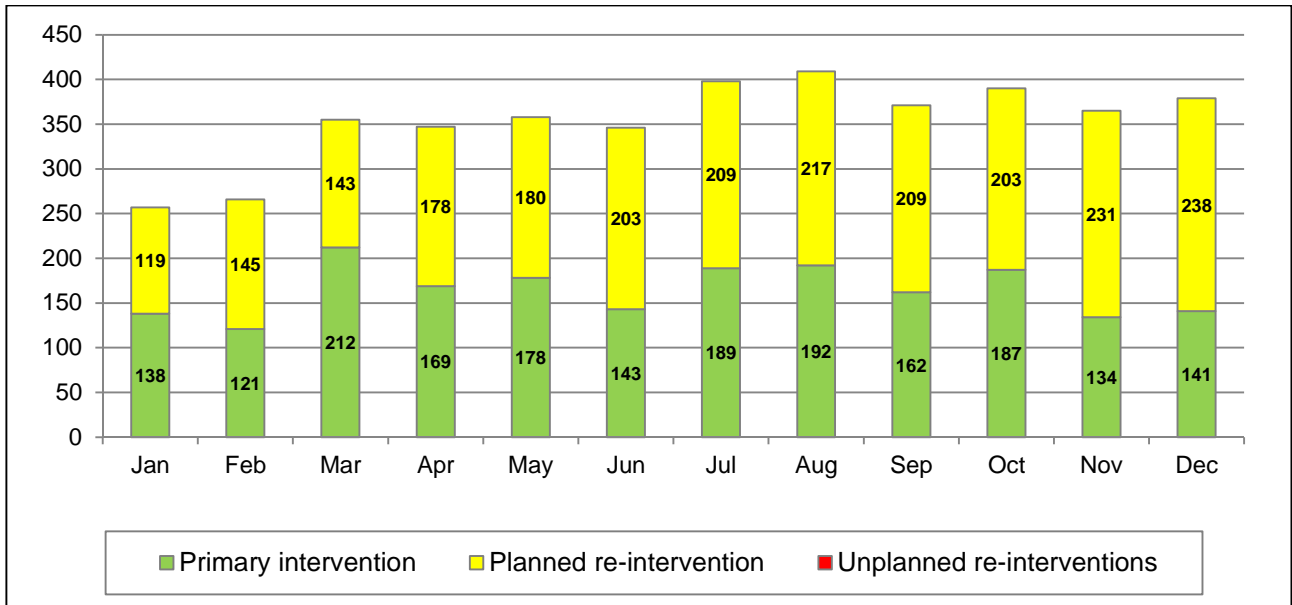


Chart 11: Order of intervention, monthly, 2014.

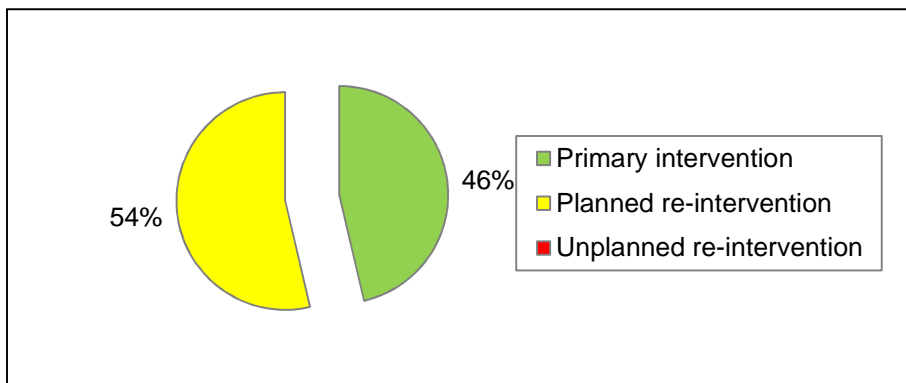


Chart 12: Order of intervention, 2014.

8. Patients demography

From the 1966 patients who underwent a surgical intervention, 296 (15,1%) were female, and 1670 (84,9%) male. The patients' age average was of 25 years.

The main age average for female was of 25, and for male of 25 years. In the following chart it can be seen the age distribution of the patients.

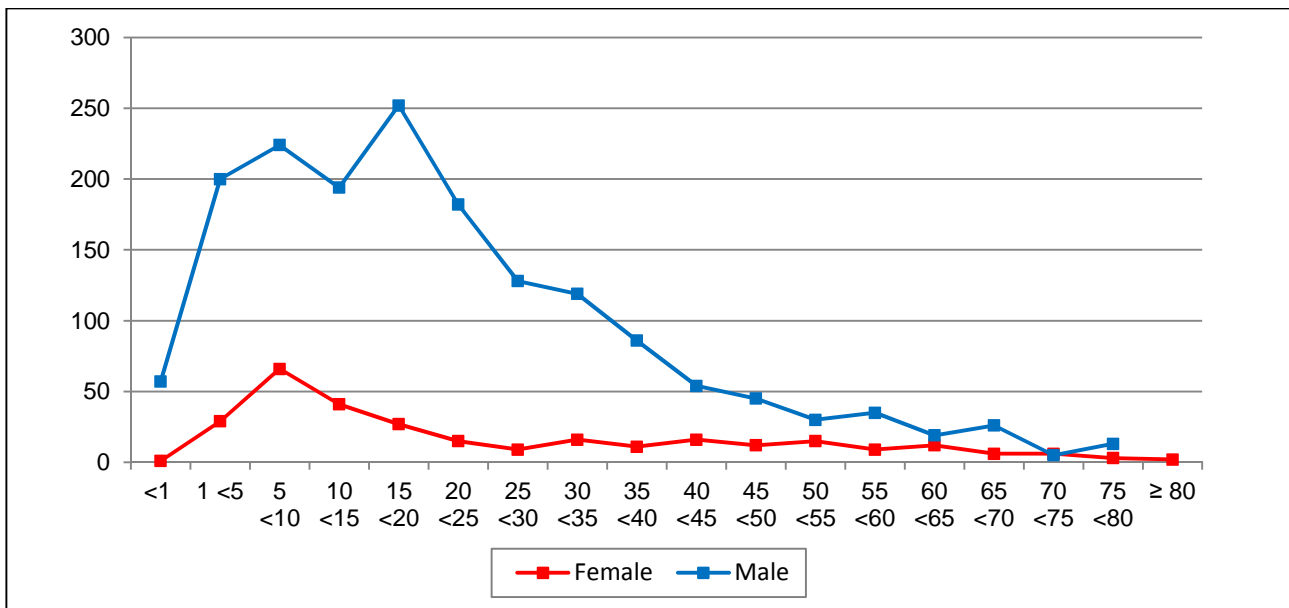


Chart 13: Age distribution, by sex, 2014.

9. Other ratios

9.1. Patient physical status

In relation to the physical status of the patient (ASA classification), from the 4241 entrances to the OR, 3089 (72,8%) were ASA 1 (patient in apparent good health notwithstanding his surgical problem), 889 (21,0%) ASA 2 (patient with mild systemic disease), 203 (4,8%) ASA 3 (patient with systemic disease severe enough to limit activity but not incapacitating), 55 (1,3%) ASA 4 (patient with severe incapacitating disease that is a constant threat to life), and 5 (0,1%) ASA 5 (patient not expected to survive 24 h with or without surgery).

9.2. Intra-operative mortality

In 2014 there were reported 8 cases of intra-operative mortality, resulting in a ratio of 0,2%. 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 period⁹.

9.3. Post-operative site infections

During 2014 there were reported 127 post-operative site infections, with a ratio of 6,4%. This ratio seems to be very near to the true reality of the project¹⁰. The team has been doing a lot of efforts to report all the surgical site infections. 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.

⁹ 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 Trauma cases have a higher risk of developing of a surgical site infection due to the nature of the pathology, the deteriorated physical status of the patient, and the important number of re-interventions.

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 August 30th, 2011. In the following chart it is given a review of the number of entrances.

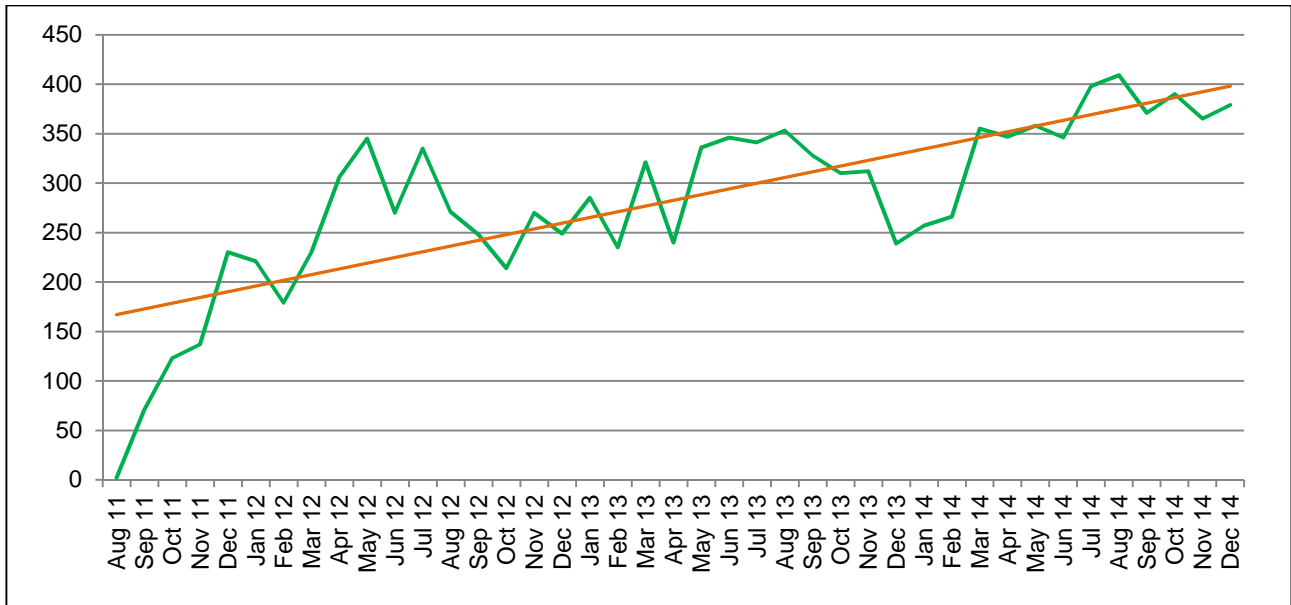


Chart 14: Number of cases from August 2011 to December 2014, monthly.

Since the beginning of the project, it is possible to see a steadily increase of activities. The trend is very irregular but the projection is clear. Aside of the decrease of activities at the beginning of 2014 (that seems to be a cyclic pattern), there is an increase of the number of entries to the OR in around 16% (2014, n=4241; 2013, n=3646).

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 6% (2014, n=1966; 2013, n=1850) that is statistical significant. This doesn't correlate directly with the number of entries to the OR.
- Violent trauma as cause of surgical interventions shows an interesting cyclic pattern with an increase of their incidence during the months of June, July and August (summer time); and with a decrease in their incidence during the months December, January and February (winter time). Aside this pattern, there is an increase of around 18% in the number of causes for intervention (2014, n=691; 2013, n=584). This characteristic can explain the non-correlation between the increase of new cases and the increase of entries to the OR due to the need of more re-interventions.
- Accidental trauma as cause of surgical interventions, in the other hand, shows a very regular pattern without a significant increase or decrease in its incidence (2014, n=1271; 2013, n=1262).
- Obstetrical causes are not present in this project, following the operational strategy.
- Other pathologies as cause of surgical intervention / hospitalisation are almost not present, that also follows the operational strategy.

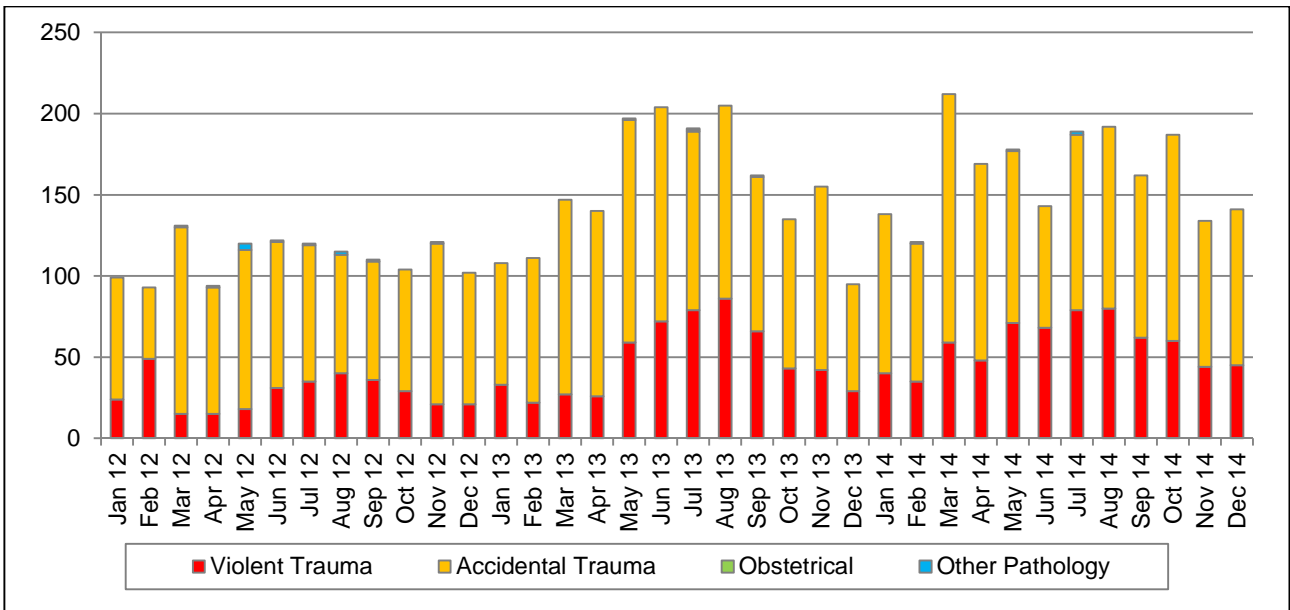


Chart 15: Causes of intervention (new cases), from January 2012 to December 2014, monthly.

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=1721) 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 procedures¹¹.

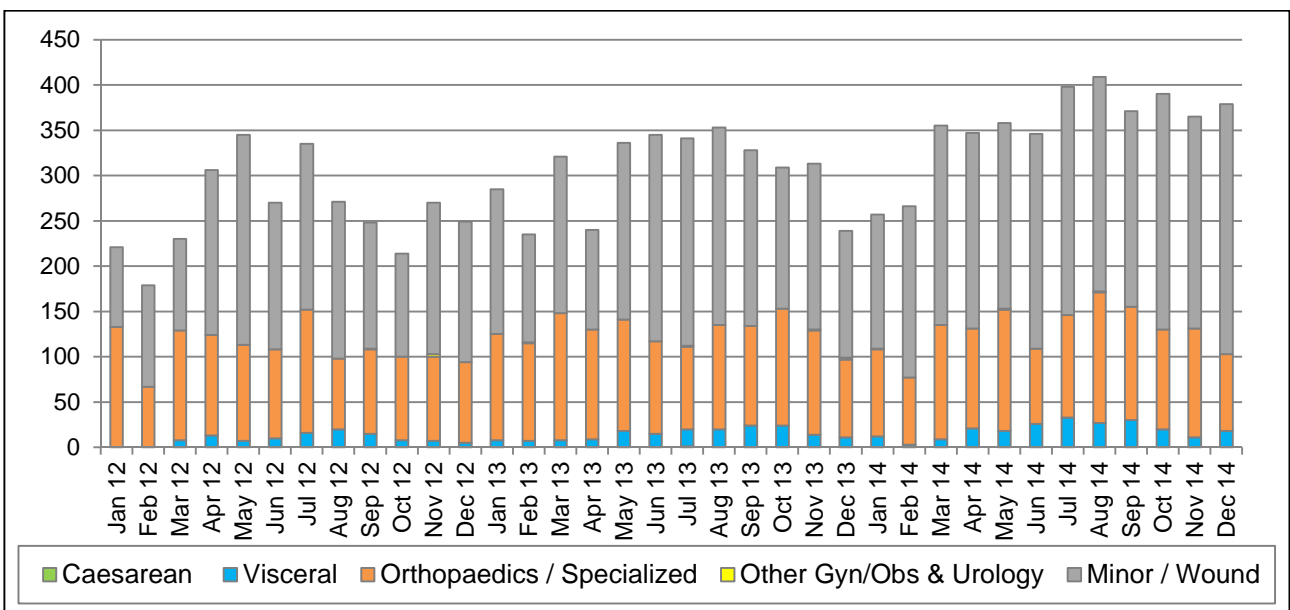


Chart 16: Types of procedures, from January 2012 to December 2014, monthly.

¹¹ 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.

From the analysis, there can be found the following characteristics:

- Orthopaedic surgery shows almost the same level of incidence as in the previous years. There is a slight decrease of interventions (2014, n=1256; 2013, n=1311), but it is not statistically significant (<5%).
- Visceral surgery shows an important increase in its incidence, of around 29% (2014, n=228; 2013, n=177). 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.
- Minor / wound surgery also, as visceral surgery, shows an important increase in its incidence, of around 28% (2014, n=2690; 2013, n=2115). This again can be explained with the increase of violent trauma as cause of surgical intervention / hospitalisation.

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 24%, in comparison to the previous year (2014, n=412; 2013, n=332).
- Internal fixation procedures, more remarkable, show an increase of around 39% (2014, n=672; 2013, n=485).

The important increase of external and internal fixation procedures should be considered when planning next orders for material supply.

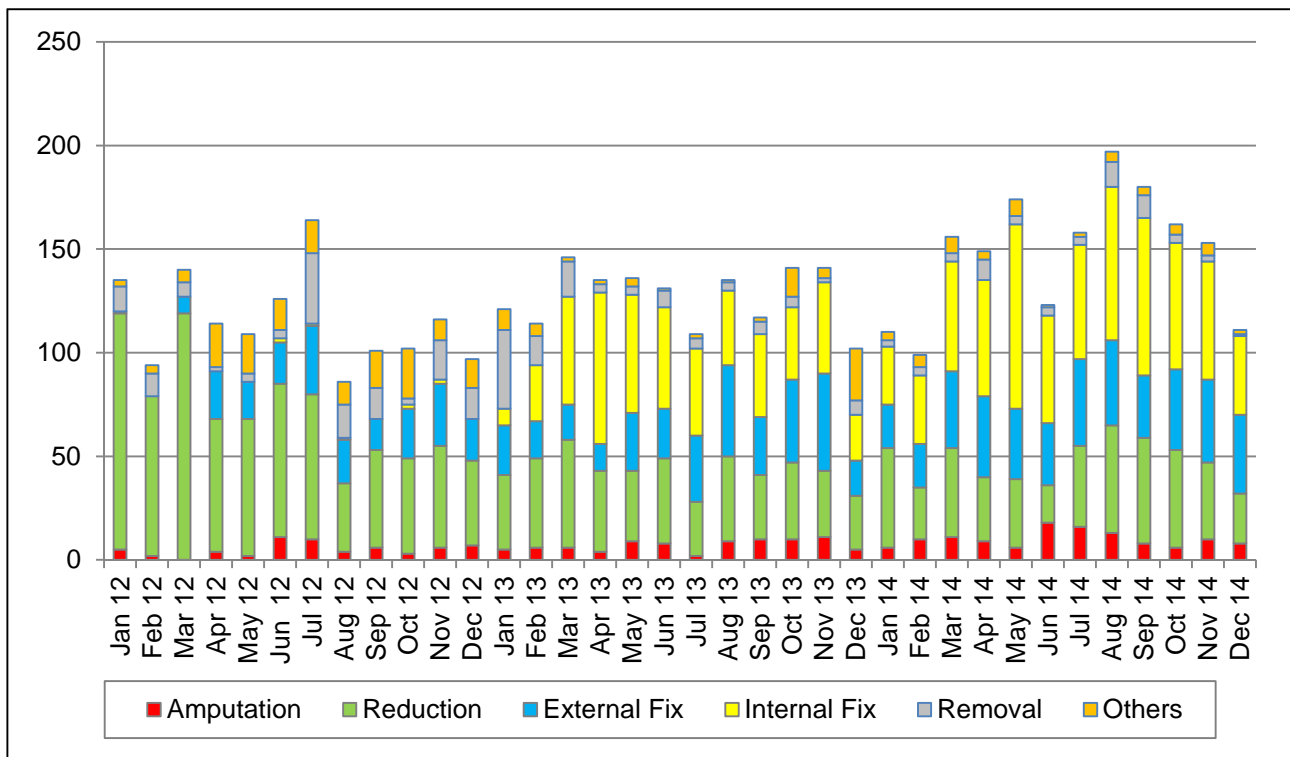


Chart 17: Types of orthopaedic procedures, all, from January 2012 to December 2014, monthly.

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