

Qandil 2006
A Swedish Humanitarian Aid Organization



Cost-Effect Analysis of Mobile Health Teams (Three years experience in Iraq)



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Cost-effect Analysis of Mobile Medical Teams, 3 years experience

Qandil has started its health activities in Iraq through mobile health teams since 1992, in the northern part of the country. Throughout 90s till the beginning of 2003, several health teams were operative in the governorates of Erbil, Suleimaniya, and Dohuk. They had moved progressively from health care delivery and vaccination campaigns, to health education and managerial issues. In the spring 2003 mobile teams in the north (Kurdistan) were halted, while five teams were activated below the former green line to operate in the governorates of Mosul, Kirkuk, and later Saladin (Tikrit). By mid 2004 there were ten mobile medical teams on average operating in the above areas, mostly dealing with IDP and with population in areas where the health system had been disrupted by the war.

The following table shows the start and end dates of the mobile health teams during 2003-2005 (some teams are still operative as shown in the table):

Table number (1) showing start and end dates of health teams

Team No.	Governorate	Start Date	End Date
T.7, 8, 9, 10	Saladin	1.6.2004	30.12.2004
T.5	Mosul	1.8.2003	30.12.2004
T.4, 6, 11	Kirkuk	1.5.2003	Still operative
T.1, 2	Erbil-Mosul	1.1.2004	30.5.2004
T.3	Dohuk_Mosul	1.4.2003	Still operative

The suspension of the activities of some mobile health teams was mainly due to security concerns in some districts and governorates (like Saladdin) and also to a lesser extent due to administrative, managerial and communication issues. Difficulties in monitoring and following the activities of such teams were another reason behind such a suspension. The suspension of the mobile health teams of Makhmur and Gewer districts (the staff of which were recruited from Erbil-DoH) was mainly due to managerial and administrative issues of these two districts between the governorates of Erbil and Mosul.

The following table shows the number of the mobile health teams and their corresponding areas of activity during the period between 2005 - 2006:

Table number (2) showing the number of teams and areas of activity

Team Number	Area of Activity
T 3	Sheikhan district
T16	Fayda IDPs camp
T4	Kirkuk City and Kirkuk district
T6	Laylan District (Kirkuk Governorate)
T11	Baba Gurgur IDPs Camp (Kirkuk Governorate)
T12, 13	Hawija Dstrict-1(Kirkuk Governorate)
T14,15	Hawija District-2(Kirkuk Governorate)

In addition, Qandil has run the health center in Mahmur UNHCR refugees' camp, and is running the Health center in the Kawa UNHCR refugees-resettlement camp. Moreover a staff consisting of a doctor and two other medical assistant have been recruited from Sheikhan health district to work in Barazi health center, and has supported the health center with incentives and a share of medicines. This support has been halted in Aug 2006.

Qandil mobile medical teams are presently in support of PHC activities in the areas described all south of the former green line. It is to be remembered that they were instituted as emergency support. They were used as a tool to give medical assistance of primary level to displaced people or to community deprived of assistance in relation to the alterations caused by the war. This motivation of the teams' continuous existence is still there, though it needs to be continuously checked. Specific data are available for the all three years since the beginning of the activities. A previous data collection was published in May 2004 A recent data collection regards the 14 month period June 2005-July 2006 and this will be analyzed:

- 1- Mosul Province (Niniwe plans-Sheikkhan district): as it is now this area is under a mixed administration, from both Mosul and Dohuk DOH's. The area is inhabited by Yazidis (mostly in Sheikhan) Christians (Tell as kof), there are also Sunni Kurds, and a few Turkmans. The district capital is Ain Sfni. In Ain Sufni there is a sector health manager of the DOH Mosul, Dr Khayri. Qandil has done a number of water projects in this area. There were many collective townships, still there, with a moderate return to their original villages of the Yazidis communities. We

have one mobile team in the area; drugs provided by Qandil are distributed freely. The area is characterized by a lack of Health Centers' structures, and a few scattered communities. Still there is movement of people, some returning IDPs, some formerly concentrated in collective townships. Other health centers in the area are in Mahad Collective Township, and in Ain Sufni. The referral hospital is the one of Ain Sufni. The activity of this mobile team will have to continue for at least one other year.

2- Barazi Health Center (Barazi Village)

This health center was built by Qandil in 2004. It is a medium size one (intermediate between A and B, or type 1 and type 2 = sub health center of the Iraqi MOH definition). Since it remained closed, Qandil decided to support for an initial six months period with incentives to one Doctor and two Medical Assistants. And we were still supporting the personnel there two year later, with some share of drugs. This is a small community, less than 100 families. However the health center covers the needs of Barazi and 13 small surrounding villages. Some 300 patients per month are seen on average, Dr Kheyri, the sub – District medical officer on charge said in case we would withdraw our support he would have to nominate some one such as a medical assistant to work in the place. Moreover 300 patients per month are not a great work load to justify a daily presence. The place could be covered by the activities of our mobile team operating in the area. Conclusions: incentives for medical assistants were terminated by end of August. Incentive for Doctor to be terminated by end of September. Our Sheikhan team to start covering the place soon as/or in the case that the doctor working in Barazi should leave by the end of September and no one be nominated in place.

3- Fayida former military base

It is on the road between Dohuk and Mosul. This has become a squatting area for some 900 families, the number is increasing constantly. These are IDP's from various areas and various reasons, including Kurds, Yazidis and Sunnis, and Arab family, a few Turkman as well. Qandil has done the water procurement for the community. Qandil has built a Health center there (part bricks part prefabricated, a small, one smaller than the sub health center = type 2). We support the personnel (one Doctor two Medical Assistants) and we provide drugs, which are distributed for free. Nearest other Health centers in Fayda village (5 Km) and Domiz village (2 Km). Referral hospital in Dohuk (15 KM). The personnel goes daily to the place with a car rented by Qandil (550 \$ per month). This assistance with incentives and drugs will continue as long as the community keeps on increasing and the administrative repartition is defined, being Fayda sub-district also of mixed responsibility between Mosul and Dohuk. It is clear the assistance will have to continue for one other year

4- Kirkuk Province

There is one fixed team in the IDP's camp of Baba Gurgur. There are four mobile teams in Hawija district. There are two teams allocated to DoH Kirkuk, one

working in Kirkuk district, one in Leylan district. The Kirkuk team is the oldest team operating since it is active from June 2003. Their growth in number (they were two in 2003) seems to have been caused, at least in part, by security concerns borne out of the delicate situation in DoH Kirkuk. Hawija, grossly 20% of the population of Kirkuk governorate, is run health-wise by a semi autonomous DoH, distinct from the DoH Kirkuk. It appears to have been underprivileged in the reconstruction effort of the post war period.

IDPs continue to be a burden for the Kirkuk Governorate, many are still squatting in the Kirkuk stadium, and many are spread in the rural communities of Leylan (Kurds) and Hawija (Arabs). After assessing the work load, teams' activity will have to continue here for one other year.

Cost effect analysis

Precise costs expenditures for the 14 months period June 2005 July 2006 have been analyzed. They have been adjusted for reference to 9 (nine) mobile teams, each one with rented car each one with one doctor plus two medical assistants. Data are adjusted in term of cost per month/per team, or in term of cost per patient/per year.

The total expenditure in the 14 months was of *121,976 US \$*. This refer only to cost of transport (9 rented car, including driver, gasoline, oil, maintenance), incentives (salaries) and drugs (acquired on the local market through licensed pharmacies, including transport and packing). The beneficiaries –patients seen- in the same time were *66,767 patients*. *Therefore the cost of the program has been 1.56 \$ per patient/per year*. This is to be compared with the previous cost effect analysis of six months period (Aug 2003-Jan 2004) which was of 3.12 \$ per patient/per year.

The voice salary (incentives) included in this analysis is a fixed amount, *350 \$ per team/per month*, 150 \$ to the physician 100 \$ each to the two Medical Assistants, and is added to the regular pay the medicals receive from the Ministry of Health. These incentives are standard and were agreed upon years ago with the local health authorities. All the medicals are in fact employed by the Iraqi Ministry of Health. In our analysis the cost of this item was of *43,775 \$* for the 14 months periods. Adjusted for a per month basis this correspond to *344 \$ per month/per team*. (Six dollars less than 350, due to some absence here and there). The previous cost analysis (Aug 2003-Jan 2004) cannot really be compared because the teams were run by Qandil employees, plus we included in the item salary of Qandil Medical Supervision and field administration, plus the cost of printing a manual in English, Arabic and Kurdish. Anyhow the total cost of salaries plus incentives alone was of *889 \$ per month per team*. Yet we can say the cost item has not changed (nor increased nor decreased) since the agreement was reached to use only medicals employed by MOH, to whom only incentives and not salaries are paid.

The voice transport is of *41,030 \$* for the 14 months period. This is the cost of renting nine four-wheels drive vehicles, each one with his driver, cost including fuel, engine oil,

and maintenance (all to be paid by the car owner). Cars are rented on the private markets after evaluation by our transport supervisor. The average cost was *of 325 \$ per month/per car*. However this is an historical average, prices having gone up recently. The last review, month of August 2006, gives an average cost of *419 \$ per car/per month*. The car price varies from 225 \$ to 550 \$ per month.

Also this cost cannot be compared with previous cost analysis (Aug 2003-Jan 2004), because at that time we included all transport cost including fuel, engine oil and maintenance, supervisor transport, and food reimbursement. At that time the cost was of 673 \$ per car per month. Yet we can say we have operated some saving in the transport voice by adhering strictly to rental of car all inclusive. This is also a powerful incentive to reduce the unnecessary use of the car.

The voice drugs have remained remarkably unchanged over the last three years. The total expenditure for drugs was of 37,571 \$ per the 14 months period. This amounts to *0.48 \$ for each patient/per year*. *The cost per patient per year of the previous cost analysis (Aug 2003-Jan 2004) was of 0.49 \$*. Opposite to that the cost per month per team has dropped from 384 \$ (2003) to 298 \$.

Cost of maintaining the teams

The average cost of one team for one month (Total cost/14/9) was of 1019 \$. However adjusting for the last monthly cost of nine cars rented (419 \$), and strictly adhering to incentives at 350 \$ per team per month, added to the average drugs cost (298 \$ per team per month) we have a slightly higher cost, mostly due to increase in transport cost, of *1067 \$ per team per month*. But we have now to see the essential part of the cost benefit analysis, i.e. the number of patients seen by the whole program. In 14 months we have seen 66,767 patients. *This corresponds to 529 patients per team per month*. *In the previous cost analysis (Aug 2003-Jan 2004), we were seeing 1560 patients per team per month*.

It is therefore evident that the benefit of each team has dropped by two third. And consequently the saving of drugs expenditures is only due to the fact that each team is seeing one third of the patients which were seen by each team three years ago. Therefore even the cost of each team for each month is lower than expected because of the lower drugs expenditure and also because of the much lower number of patients seen by each team on average.

Important is the finding that renting cars is cheaper than using cars owned by the organization with drivers paid by the organization. The cost of drivers' salaries, fuel, engine oil, maintenance, is sensibly higher than the cost of renting cars. This is much at difference compared with other countries i.e. in Africa.

In the previous cost analysis (2003-2004), (published May 2004) as said, administrative organizational costs were included. Precisely transport (including driver's salary where

any if separated by car rental) accounted for 27% of the total cost while the salary were (except driver's salary where any) 36 % of the total. However if one consider only transport and salary and drugs (in our data 15% of the total cost) to make the total, of course transport and salary would have a much higher percentile. Drugs cost in our old report was 15 % of the total cost. These costs of course are still there, for instance the cost of paper, the cost of lunch for the monthly meetings, the salaries of Qandil health staff and of accountants, the transport cost of Qandil staff, the cost of professional and managerial supervision, and the general cost of an office.

However we decided to restrict the analysis to three factors, namely incentives, transport, drugs, for reasons given below at page 7. In the previous cost analysis the monthly maintenance of one team was evaluated to be around 2000 \$ for an established organization, including administrative cost, while it was evaluated much higher for a newly established organization, around 3,300 \$ per month. Assuming administrative (in the broad meaning described) cost to an additional 1000 to 2,500 US \$ per month respectively for an already established organization and for a newly created organization; of course the more the teams the more the administrative cost are best employed, at least in small numbers such as five teams versus ten teams (better cost-benefit).

The lesson learned from these data collection is manifold. Emergency mobile teams should work six days a week, and not five. Incentives are paid precisely to justify longer working hours. If it is felt the emergency phase is over and people unwilling to work six day a week, still mobile teams should see at least 750 patients per month, averaging from 30 to 40 or more patients per day. Any lesser number makes a team work redundant and questionable. Security is said to account for much of the reduction in work load. Even more so if teams cannot operate due to security, their number should be reduced and area coverage should rotate among the teams. Going to the specific numbers of patients seen by each team, month by month, is patently clear, the team in Leylan and the teams in Hawija are seeing a too low number of patients per month to be justified. So the decrease in number of patients seen per month per team (1500 in 2003 versus 500 in 2006) is due in large part to those specific five teams. Details are shown below within brackets the minimum and maximum patients seen in one month over the 14 months period:

Number of patients seen by each health team in 14 months, plus monthly average

Team 3 (Shekhan district)	9,744 pts total	696 pts/per month average (536-833)
Team 4 (Kirkuk district)	9,025 pts total	644 pts/per month average (534-899)
Team 6 (Leylan district)	4,516 pts total	322 pts/per month average (258-439)
Team 11 (Baba Gurgur)	10,226 pts total	730 pts/per month average (132-1,165)
Team 12 (Hawija district)	4,521 pts total	322 pts/per month average (172-599)

Team 13 (Hawija district)	4,687 pts total	334 pts/per month average (92-451)
Team 14 (Hawija district)	5,394 pts total	385 pts/per month average (132-1,310)
Team 15 (Hawija district)	6,065 pts total	433 pts/per month average (208-792)
Team 16 (Fayda)	12,721 pts total	908 pts/per month average (696-1,047)

It is clear from the data that Leylan team can be dissolved and its duty taken up by the Kirkuk proper mobile team. It is also clear that two mobile teams are more than enough in Hawija district. This matter has been brought up to the attention of our counterpart in Kirkuk, Dr Buran, the deputy DoH. Three teams in Kirkuk will be terminated by September 2006, their activities to be taken up by the remaining teams. The fixed team in Barazi is being terminated. The continuous monthly monitoring will allow for reconsideration in case of increased need in those or other areas. Cost benefit analysis should be repeated every six months –one year.

There are some final considerations: the monthly reporting and the monthly meeting have clearly worked well in a self correcting way as can be seen by the unchanged expenditure on drugs (0.48-0.49 cents of \$ per patient per year) in the overall period of three years (Aug 2003-Aug 2006). Monthly reporting meeting should continue as long as the program continues.

A separated factor contributing to the lower cost of the program overall is the change in policy from using Qandil's own car and driver to renting cars with all inclusive monthly cost.

There is no reason to think that Qandil's administrative costs have changed. The reason not to include the administrative costs is that they would be an arbitrary, though reasoned, attribution to the program of the general administrative cost of the Health sector of the organization. Since we are particularly concerned with the mobile team activity, we restrict our analysis to costs directly and totally related to such activity. However in terms of cost effect there is no difference (for administrative cost) between five teams (2003) and 10 teams (2006). Probably for higher number, the administrative cost would increase for the need of additional human resources such as monitors and assessment etc.

Beside the teams with lowest work load, even the average of the team with highest work load (~ little more than 800 patients per month), the two fixed teams in the IDPs camps of Baba Gurgur and Fayda, is still almost half of the per team work load back in 2003, and the same it is true for the two best performing mobile teams. This is undoubtedly a consequence of better overall health assistance (more functioning health centers) and better overall water provision compared with the immediate post war period. In other words, there is lesser demand for health services. This is the hope for an exit strategy, i.e. handing over the all of the activities by 2008 to the respective Directorates of health of the areas presently assisted.

Morbidity data

We do not collect mortality data. This must be done at least in the two camps of Fayda and Baba Gurgur (it must be done in Kawa camp as well). The other teams are mobile but they go more or less to the same locations. However is difficult to get morbidity data in the non fixed team for various reasons. Yet some indicator of clinical activity must be found. This remains a challenge. So far, as indicated above, the only indicator seems to be a lesser demand.

There is no evidence of relevant epidemics. There is no evidence in fact of significant communicable disease. Most of the conditions are mild and non life threatening.

Perhaps the most interesting finding is the confirmation of Airways Infections is the leading disease face to the second most common which is watery diarrhea. Airways infection is a grouping of diseases and that justify the psychological impression watery diarrhea be, particularly in summer that watery diarrhea is the most common disease. There is certainly a seasonal variation there. It is a fact watery diarrhea continues to be present, despite water provision. While both the amount of water and its cleanness must be verified, the correct data collection must be verified as well.

In conclusion there is quite some indirect evidence to a positive impact of the mobile health teams an the assisted population

The least diagnoses made by the health teams included suspected meningitis, suspected malaria, scorpion stings and constipation. Scorpion stings and snake bites are know to be more common in summer, and in specific areas. One death of a child has been reported (scorpion sting) in Laylan District. Leishmaniasis is said to be decreasing.

Drug consumption

Antibiotics continue to be the most prescribed and most expensive item. The high rate of antibiotics prescription is due to the prevalence of Airways disease in the regions, particularly in children, and the inclination of patients to overuse antibiotics a habit of which is sometimes encouraged by doctors & medical assistants. Clinical surveillance and monthly monitoring has succeeded in maintaining the pro-capita cost the same despite a reported slight increase on the cost of drug in the local market.

In the consumption form, the high prescription rate of analgesics (Paracetamol tablets, Brufen tablets, Diclofenac tablet and ampoule ... etc.), is obvious. The high prescription of analgesics is understandable since they are the most prescribed & used item worldwide. Again the important result of having kept the pro-capita expenditure per year of drugs must be underlined

Analysis of morbidity data and drug consumption data is still ongoing and will be ongoing monthly.

Conclusion

Monthly meetings are of in-discussed utility. The needs of mobile teams need to be questioned at least every six months, this concomitantly with the monitoring of IDPs situation. It is foreseeable the need of the team will continue over the next six month – one year period. It is foreseeable that the mobile teams will be needed north of the green line as well if the current flow of Arabs IDPs from the centre to the North will continue.