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Report on Pilot Palliative Care Projects in Armenia

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Palliative Care Project Piloting in Armenia

Global Fund funded this project through the Round 8 Health System Strengthening Program. The project was approved by the Country Coordinating Mechanism Group for Armenia. The Global Fund Project Coordination Team at the Ministry of Health of the Republic of Armenia was responsible for adminstering the program and did this through a sub-agreement with the NGO "Patient's Rights Protection Center." The main objective of the project was to establish model palliative care programs that could be replicated throughout the public health care system in Armenia. The project was not limited to service to HIV/AIDS and patients with Tuberculosis, in the belief that creating palliative care infrastructure would ultimately be of benefit to these patient populations.

The Palliative care project was implemented by the "Patients Rights Protection Center" NGO with four co-partners - National Oncology Center after A. Fanarjyan (Yerevan), Yerevan Muratsan Medical Center, Ararat Medical Center and Vanadzor number 1 hospital. The financial partner of the program is the Global Fund.
This report covers the pilot program starting **July 1st, 2011 until June 30th, 2012** and the analysis below is for this project period.

I. Methodology

Measurement of the impact of palliative care was done using standardized questionnaires: the first set of measures was done on the first admission of the patients to the palliative care service and the second set of measures was done on the second and all subsequent visits to the patient. Each questionnaire is described below. The international expert for the project Dr Stephen Connor approved the measures for use in this study. The face to face interview method was used during the research.

Each pilot site had a palliative care coordinator that was responsible for data collection. After each month the monthly data was sent to the main implementing partner of the project "Patients Rights Protection Center" NGO where the data was analyzed using the SPSS 13.0 statistical package.

In addition we conducted several training programs to teach palliative care skills to nurses and physicians that were to work in the pilot projects. Two international train the trainer programs were delivered 1) EPEC-O (Education in Palliative and End-of-Life Care – Oncology Version for physicians) and ELNEC (End-of-Life Nursing Education Coalition). We conducted standardized pre and post tests to determine level of knowedge gained from these trainings (See discussion section for results).

The questionnaire for the first admission to palliative care consists of the following parts:

1. **General data about the patient**: Name, Age, Sex, Place of living, Disease, Type of the provided service, Start and end dates of the service and duration of it.
2. **EQ-5D scores on admission**
3. **EQ-VAS records on admission**
4. **Current Pain Score**
5. **Karnofsky Performance Status Scale on admission**
6. **Neuropatic pain scale on admission**
7. **Hospital Anxiety and Depression Scale on admission**
8. **The treatment** (medicines prescribed by doctors) **on admission**

The second questionnaire done on each subsequent visit consists of the following parts:

1. Name, Type of the provided service, Date of the service and the duration of it.
2. **EQ-5D scores**
3. **EQ-VAS records**
4. **Current Pain Score**
5. **Karnofsky Performance Status Scale**
6. **The treatment** (medicines prescribed by doctors) **on admission**

Each section below describes the methodology of analyzing each component of the questionnaire.

EQ-5D

The EQ-5D descriptive system comprises the following 5 dimensions: mobility, self-care, usual activities, pain/discomfort and anxiety/depression. Each dimension has 3 levels: no problems, some problems, extreme problems. The respondent is asked to indicate his/her health state by ticking (or placing a cross) in the box against the most appropriate statement in each of the 5 dimensions. This decision results in a 1-digit number expressing the level selected for that dimension. The digits for 5 dimensions can be combined in a 5-digit number describing the respondent's health state.

EQ-VAS (Health Scale)

The EQ-VAS (Health Scale) records the respondent's self-rated health on a vertical, visual analogue scale where the endpoints are labeled 'Best imaginable health state' (100) and 'Worst imaginable health state' (0). This information can be used as a quantitative measure of health outcome as judged by the individual respondents.

The VAS pain scale

The VAS (Visual Analogue Scale) pain scale is a 10‑point scale for measuring the level of pain, ranging from 0 (no pain) to 10 (worst pain imaginable). Patients who answered from 1 to 3 are considered to have ***mild pain***, those who scaled their pain from 4 to 6 are considered to have ***moderate pain*** and patients with scores from 7 to 10 are considered to have ***severe pain***. The pain scale is administered initially and at each subsequent visit for patients with pain. Patients have a choice of different VAS options with and without numbers and for those unable to understand a set of pain faces that can be translated into 0-10 scores. Pain is measured only at the present time in this study, not least or worst pain.

Hospital Anxiety and Depression Scale

The scoring system of anxiety and depression is assessed by the Hospital Anxiety and Depression Scale (HADS), which allows to assess patients' mood disorder, especially anxiety and depression, in order to understand the experience of suffering in the setting of medical practice. The introduction of the scales into general hospital practice would facilitate the large task of detection and management of emotional disorders of patients. The HADS is a self-administered rating scale with 14 questions yielding separate scores for anxiety and depression. Each question had been answered by patient on a four point (0-3) response category so the possible scores ranged from 0 to 21 for anxiety and 0 to 21 for depression. An analysis of scores from 0 to 7 was regarded as ***Normal*** range, a score of 8 to 10 being just suggestive of the presence of the respective state (***Borderline abnormal***) and a score of 11 or higher indicating probable presence of "caseness" or mood/emotional disorder (***Abnormal***). The HADS is used on admission as a screening tool to detect the presence of anxiety and/or depression.

Karnofsky Performance Status Scale

The Karnofsky Performance Scale Index allows patients to be classified as to their functional impairment. This can be used to compare effectiveness of different therapies and to assess the prognosis in individual patients. The lower the Karnofsky score, the worse the survival for most serious illnesses. The Karnofsky score runs from 100 to 0, where 100 is "perfect" health and 0 is death. Patients who have scores 100%, 90% or 80% considered to be able to carry on normal activity and to work, they need no special care. Patients with 70%, 60% and 50% scores are unable to work, able to live at home and care for most personal needs, and varying amount of assistance needed. And finally, those who have scores 40%, 30%, 20%, 10% are unable to care for self, require equivalent of institutional or hospital care, and disease may be progressing rapidly.

Neuropathic Pain Diagnostic Tool

This part of the questionnaire is used to diagnose neuropathic pain and consists of total of 10 items grouped in 4 sections. The first seven items are related to the quality of pain (burning, painful cold, electric shocks) and its association to abnormal sensations (tingling, pins and needles, numbness, itching). The other 3 items are related to neurological examination in the painful area (touch hypoesthesia, pinprick hypoesthesia, tactile allodynia). A score of 1 is given to each positive item and a score of 0 to each negative item. The total score is calculated as the sum of all 10 items, and the cut-off value for the diagnosis of neuropathic pain is a total score of 4/10. This also is used as a screening tool on admission to the palliative care service.

II. Characteristics of the patients by site

Analysis of research results shows that during the project period: July 1st, 2011-June 30th, 2012, a total of **132** patients were given palliative care in homes and hospitals. Oncology Center served 36 patients, Ararat Hospital served 30 patients, Vanadzor Hospital served 29 patients and Muratsan Center served 37 patients (see Table 1).

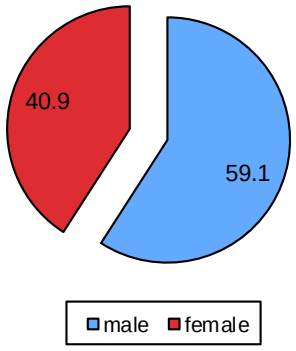
Table 1: Number of admissions by site

Site	Number of admissions	
	N of patients	Percent
Muratsan	37	28.0
Ararat	30	22.7
Vanadzor	29	22.0
Oncology	36[1]	27.3
Total	**132**	**100**

A. Demographics of the patients by site

1. *Sex of the patients*

Chart 1: Sex of the patients in percent



78 (59.1%) of all served patients are female and 54 (40.9%) are male (see Chart 1). Muratsan Center served 13 male and 24 female patients, Ararat Hospital served 11 males and 19 females, Vanadzor Hospital served 10 male and 19 female patients and finally Oncology Center served 20 male and 16 female patients (See Table 2).

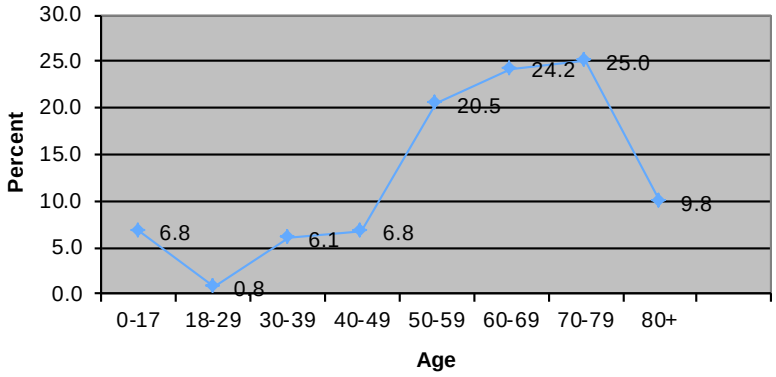
Table 2: Sex of the patients by site

Site	Gender	
	male	female
Muratsan	13	24
Ararat	11	19
Vanadzor	10	19
Oncology	20	16
Total	**54**	**78**

[1] Note that the Oncology Center reports that they actually served 82 patients, but those patients, mainly emergency cases that were near death were not enrolled even though some services were reported.

2. *Age of the patients*

Chart 2: Age of the patients



During the reporting period Muratsan Center served 9 children up to 17 years old (6.8 %), Ararat hospital served 1 patient from 18 to 29 years old (0.8 %). Adults from 30 to 39 years old among research population compose 8 people (6.1 %), from 40 to 49 years old compose 9 people (6.8 %), from 50 to 59 – 27 people (20.5 %), from 60 to 69 years old compose 32 people (24.2 %), and among the age of 70-79 years old patients compose 32 people (25 %). People who are more than 80 years compose 13 (9.8 %) of all research population (see Chart 2 and Table 3).

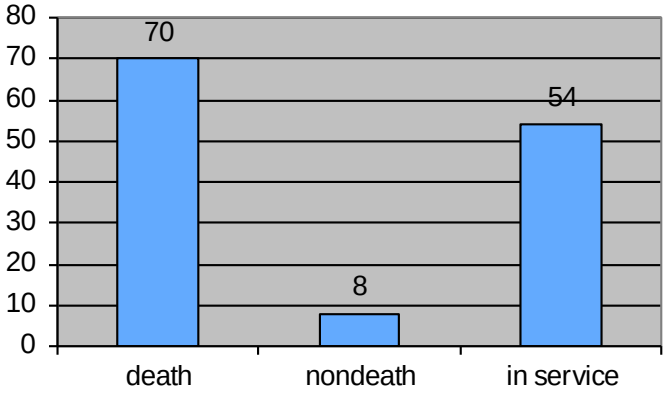
Table 3: Age of the patients by site

Site	Age									
	0-17	18-29	30-39	40-49	50-59	60-69	70-79	80+	Mean	Median
Muratsan	9	0	1	2	8	10	4	3	49.11	59
Ararat	0	1	3	2	10	4	8	2	59.5	58
Vanadzor	0	0	3	4	4	8	8	1	61.41	65
Oncology	0	0	1	1	5	10	12	7	69.11	72
Total	**9**	**1**	**8**	**9**	**27**	**32**	**33**	**13**	**59.63**	**63**

The results show that average age of overall research population is **59.63** years old, for Muratsan Center it is 49.11 years old, For Ararat site it is 59.5, for Vanadzor Hospital the average age of patients is 61.41 and finally for Oncology center it is 69.11 (see Table 3). People from 50 to 80 years old are the most vulnerable population prone to become the subjects of palliative care.

3. *Patient status*

Chart 3: Death and non death discharges



During the reporting period 70 (53 %) patients have died and 8 (6.1 %) of the patients left hospitals for different reasons (moving to capital or other foreign country for treatment, etc). 54 (40.9 %) patients are still in service (see Chart 3 and Table 4).

Table 4: Number of death and non-death discharges of the patients by site

Site	Death	Non -death	In service
Muratsan	14	7	16
Ararat	20	1	9
Vanadzor	11	0	18
Oncology	25	0	11
Total	**70**	**8**	**54**

Oncology center had the highest rate of death cases, and the lowest was in Vanadzor hospital. The highest rate for non-death discharge of the patients was at Muratsan Center.

4. *Length of Service*

Length of the provided service of the patients was calculated only for those patients who have died during the reporting period or left the Medical Centers for non-death reasons.

As was mentioned above 70 patients have died and 8 of the patients left hospitals for different reasons (moving to capital or other foreign country for treatment, etc). The average service length (mean) of these 78 patients is **64.06** calendar days, and median length of the service is **37** calendar days. The Histogram shows that the shortest term of service was 1 day and the longest service term was 228 days.

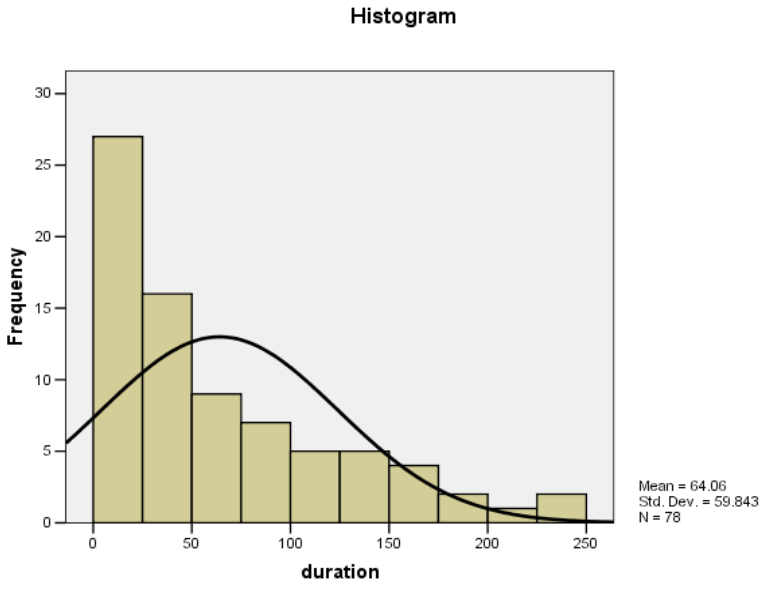


Table 5: Average and Median LOS by site		
Site	**Mean**	**Median**
Muratsan	27.86	19
Ararat	94.24	74
Vanadzor	44.55	25
Oncology	77.72	68
Overall statistics	**64.06**	**37**

The average lengh of service of death and non death discharges of Muratsan Center is 27.86 days, for Ararat Hospital it is 94.24 callendar days, for Vanadzor Hospital the number is 44.55, and for Oncology Center it is 77.72 days (see Table 5).

B. Diagnosis of the patients

Table 6 below shows statistics of diseases that survey population has. Overall percent of patients with cancer compose 78.5 % (103 patients), and non cancer patients compose 21.7 % (28 patients) of all research population.

Frequent cancer types are:

1. Breast cancer - 26 people, 19.7 % of research population
2. Lung cancer – 17 people, 12.9 % of research population
3. Rectal cancer – 9 people, 6.8 % of research population
4. Uterus cervix cancer – 8 people, 6.1 % of research population
5. Stomach cancer – 7 people, 5.3 % of research population
6. Prostate gland cancer– 4 people, 3 % of research population

Most common non-cancer categories are:

1. Ischemic stroke - 4 people, 3 % of research population
2. Diabetes – 3 people, 2.3 % of research population
3. Hypertonic disease – 3 people, 2.3 % of research population
4. Mucoviscidosis– 2 people, 1.5 % of research population
5. Spinal muscular atrophy - 2 people, 1.5 % of research population

Cancers common among women are *Breast cancer, Uterus cervix cancer, Rectal and Sigmo rectal cancers, Stomach cancer, Ovarian Cancer and Pancreas cancer*.

Cancers common among men are *Lung cancer, Stomach cancer, Rectal cancer, Prostate gland cancer, Brain cancer, Kidney cancer, Melanoma, and Neck cancer*.

Table 6: Diagnosis of the patients/ breakdown by sex

Name of a disease	Frequency	Percent	Male	Female
Alveolar soft part fibro sarcoma	1	0.8	0	1
Bile duct cancer	1	0.8	0	1
Bladder cancer	2	1.5	1	1
Brain cancer	3	2.3	2	1
Brain tumor	1	0.8	0	1
Breast cancer	26	19.7	0	26
Child brain strike	1	0.8	1	0
Chronic Hepatitis	1	0.8	1	0
Diabetes	3	2.3	0	3
Duchenne myopathy	1	0.8	1	0
Encephalopathy	1	0.8	0	1
Extremity/limb cancer	1	0.8	1	0
Femur chondrosarcoma	1	0.8	1	0
Fibro sarcoma of the upper jaw	1	0.8	0	1
Gallbladder cancer	1	0.8	0	1
Hotchkin disease	2	1.5	2	0

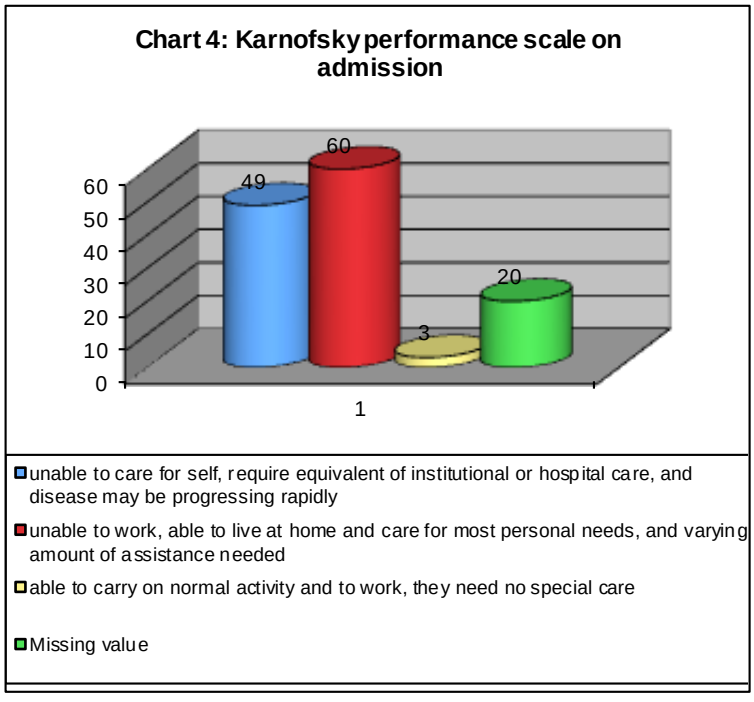
Hypertonic disease	3	2.3	0	3
IHD, heart failure, diabetes	1	0.8	1	0
Ischemic stroke	4	3.0	0	4
Kidney cancer	3	2.3	2	1
Knee anchylosis	1	0.8	1	0
Leg cancer	1	0.8	1	0
LGM, III BST	1	0.8	0	1
Lung cancer	17	12.9	17	0
Melanoma	3	2.3	2	1
Metastatic leison to the skeletal system	1	0.8	0	1
Mucoviscidosis	2	1.5	1	1
Neck cancer	2	1.5	2	0
Osteogenesis	1	0.8	0	1
Ovarian Cancer	2	1.5	0	2
Pancreas cancer	2	1.5	0	2
Parkinson's disease	1	0.8	1	0
Pharynx cancer	1	0.8	0	1
Prostate gland cancer	4	3.0	4	0
Rectal cancer	9	6.8	4	5
Sigmo rectal cancer	3	2.3	0	3
Small intestine cancer	1	0.8	0	1
Spinal Amitrophia	1	0.8	0	1
Spinal muscular atrophy	2	1.5	2	0
Stomach cancer	7	5.3	4	3
Tongue cancer	2	1.5	1	1
Tuberculosis	1	0.8	1	0
Two-sided coxarthrosis, varicose eczema of legs, diabetes, arterial hypertension	1	0.8	0	1
Uterus cervix cancer	8	6.1	0	8
Total	**132**	**100.0**	**54**	**78**

C. Patients performance status on admission (Karnofsky scores)

As it was mentioned in Methodology section patients who have scores 100%, 90% or 80% considered to be able to carry on normal activity and to work, they need no special care. These patients on admission compose 2.3 % (only 3 patients) of all survey population. Patients with 70%, 60% and 50% scores are unable to work, able to live at home and care for most personal needs, and varying amount of assistance needed. These category total for survey population is 45.5 % (60 patients). And finally, those who have scores 40%, 30%, 20%, 10% are unable to care for self, require equivalent of institutional or hospital care, and disease may be progressing rapidly. For our population this number is 37.1 % (49 patients). For 15.2 % (20 patients) of all patients Karnofsky scores on admission are missed. See Table 7 and Chart 4.

Table 7: Karnofsky scores on Admission

		Frequency	Percent	Valid Percent	Cumulative Percent	Statistics			
Valid	10%	3	2.3	2.7	2.7	**Mean**	**Median**	**Mode**	**St. deviation**
	20%	4	3.0	3.6	6.3	46.16	50	50	13.705
	30%	13	9.8	11.6	17.9				
	40%	29	22.0	25.9	43.8				
	50%	36	27.3	32.1	75.9				
	60%	21	15.9	18.8	94.6				
	70%	3	2.3	2.7	97.3				
	80%	3	2.3	2.7	**100**				
	Total	**112**	**84.8**	**100**					
Missing	System	20	15.2						
Total		**132**	**100**						



Average performance status of patients (Karnofsky score) on admission is **46.16**.

D. Patients HADS scores on admission

1. *Patient Anxiety Score on Admission*

The analysis of Anxiety scores shows that more than half of the patients (68 people, 51.5 %) had Abnormal level of anxiety on admission, 24 patients (18.2%) had some emotional problems and 13 patients (9.8 %) had Normal emotional state on admission (see Table 8).

Table 8: Anxiety Scores within hospital

Hospital		Missing scores	Abnormal	Borderline abnormal	Normal	Total
Muratsan	**Count**	**6**	**26**	**1**	**4**	**37**
	% within Hospital	16.2	70.3	2.7	10.8	100
	% with Anxiety	22.2	38.2	4.2	30.8	28.0
Ararat	**Count**	**13**	**11**	**4**	**2**	**30**
	% within Hospital	43.3	36.7	13.3	6.7	100
	% with Anxiety	48.1	16.2	16.7	15.4	22.7
Vanadzor	**Count**	**3**	**15**	**10**	**1**	**29**
	% within Hospital	10.3	51.7	34.5	3.4	100
	% with Anxiety	11.1	22.1	41.7	7.7	22.0
Oncology	**Count**	**5**	**16**	**9**	**6**	**36**
	% within Hospital	13.9	44.4	25.0	16.7	100
	% with Anxiety	18.5	23.5	37.5	46.2	27.3
Total	**Count**	**27**	**68**	**24**	**13**	**132**
	% within Hospital	100	100	100	100	100
	% with Anxiety	20.5	51.5	18.2	9.8	100

2. ***Patient Depression scores on Admission***

The analysis of HADS shows that more than half of the patients (74 people, 56.1 %) had high depression state (Abnormal) on the first admission. 16 patients (12.1%) had some symptoms of depression (Borderline Abnormal) and 15 patients (11.4 %) had Normal emotional order on first admission (see Table 9).

Table 9: Depression Scores within hospital

Hospital		Missing Scores	Abnormal	Borderline abnormal	Normal	Total
Muratsan	**Count**	**6**	**23**	**3**	**5**	**37**
	% within Hospital	16.2	62.2	8.1	13.5	100.0
	% with Depression	22.2	31.1	18.8	33.3	28.0
Ararat	**Count**	**13**	**14**	**2**	**1**	**30**
	% within Hospital	43.3	46.7	6.7	3.3	100.0
	% with Depression	48.1	18.9	12.5	6.7	22.7
Vanadzor	**Count**	**3**	**23**	**2**	**1**	**29**
	% within Hospital	10.3	79.3	6.9	3.4	100.0
	% with Depression	11.1	31.1	12.5	6.7	22.0
Oncology	**Count**	**5**	**14**	**9**	**8**	**36**
	% within Hospital	13.9	38.9	25.0	22.2	100.0
	% with Depression	18.5	18.9	56.3	53.3	27.3
Total	**Count**	**27**	**74**	**16**	**15**	**132**
	% within Hospital	100	100	100	100	100
	% with Depression	20.5	56.1	12.1	11.4	100.0

E. VAS Pain Scale on Admission

1. Pain Scale of patients on admission

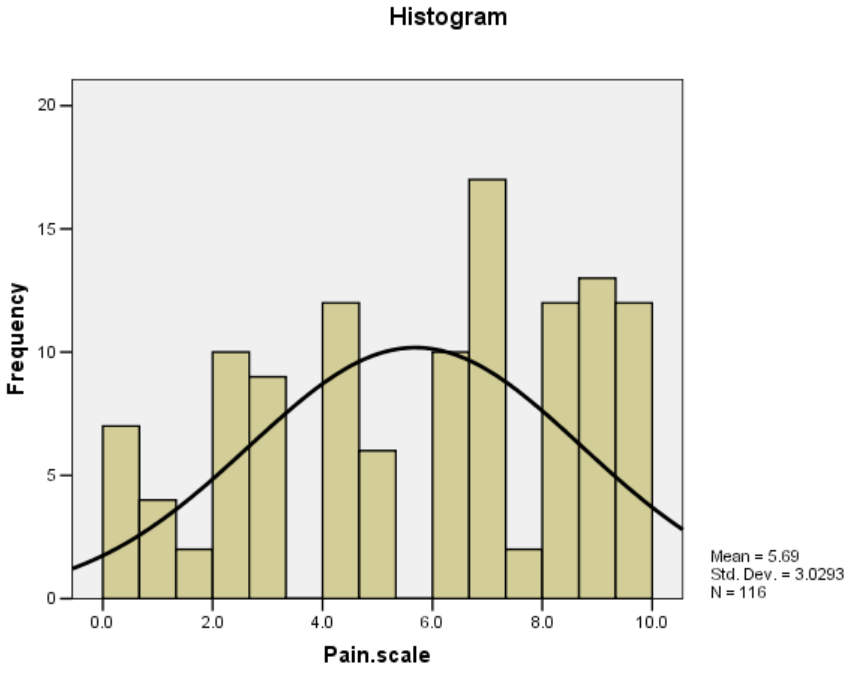
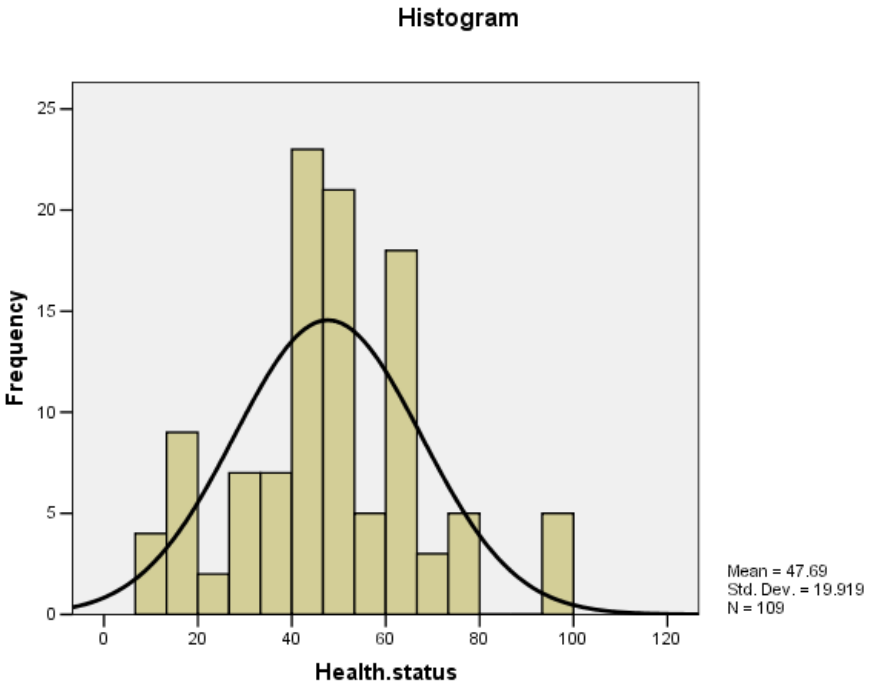


Table 10:Pain Scale		
Scale value	**Frequency**	**Percent**
0	7	5.3
1	4	3.0
1.5	2	1.5
2	10	7.6
3	9	6.8
4	11	8.3
4.5	1	0.8
5	6	4.5
6	10	7.6
7	17	12.9
7.5	2	1.5
8	11	8.3
8.5	1	0.8
9	13	9.8
10	12	9.1
Total	**116**	**87.9**
Missing	16	12.1
Total	**132**	**100**

The mean score for Pain Scale of patients on admission is **5.69**, and the median is **6**. People who had mild pain (hurts little bit) on admission compose 24.2 % (32 people) of research population, 21.2% (28 people) of the respondents had moderate pain (hurts even more) on admission, 42.4% (56 people) of research population had severe pain (hurts worst) on admission. 12.1% (16 patients) of the patients' pain information is missing (see Table 10).

F. EQ-VAS Health Scale on Admission

2. Health Scale of patients on admission



The mean score for Health Scale of patients on admission is **47.69**, and the median is **49**.

Table 11 shows that 54.8% (72 patients) of all research population on admission had pain more close to worst imaginable health state, 28.4% (37 people) of population had pain more close to best imaginable health state. 17.4% (23 patients) of the patients' health scores information is missing (see Table 11). Missing data distributed by site looks like this: 73.9% (17 patients) is missing from Muratsan Center, 4.3% (1 patient) is missing from Vanadzor site, and 21.7% (5 patients) is missing from Oncology center.

Table 11: Health status

Scale value	Frequency	Percent
10	4	3.0
15	4	3.0
16	1	0.8
17	2	1.5
20	2	1.5
25	2	1.5
30	3	2.3
32	3	2.3
33	1	0.8
35	4	3.0
37	2	1.5
38	1	0.8
40	13	9.8
42	1	0.8
43	2	1.5
44	1	0.8
45	5	3.8

46	1	0.8
47	1	0.8
48	1	0.8
49	1	0.8
50	17	12.9
52	1	0.8
55	3	2.3
56	1	0.8
57	1	0.8
60	15	11.4
65	3	2.3
70	3	2.3
77	1	0.8
78	1	0.8
80	3	2.3
100	5	3.8
Total	109	82.6
Missing	23	17.4
	132	100

G. Neuropatic Pain of Patients on Admission

Table 12 and Chart 5 below show the results of the analysis of patients neuropatic pain on admission. As it was described in Methodology section the cut-off value for the diagnosis of neuropathic pain is a total score of 4/10. Taking into consideration this fact it is clear that 53.8% (71 patients) of patients had no neuropatic pain on admission. 30.3% (40 people) of research population had neuropatic pain on admission, and the remaining 15.9% (21 people) this score is missed.

The mean score for neuropatic scale is **2.85**, and the median is **2**.

Chart 5: Patients Neuropatic Pain Scale on Admission

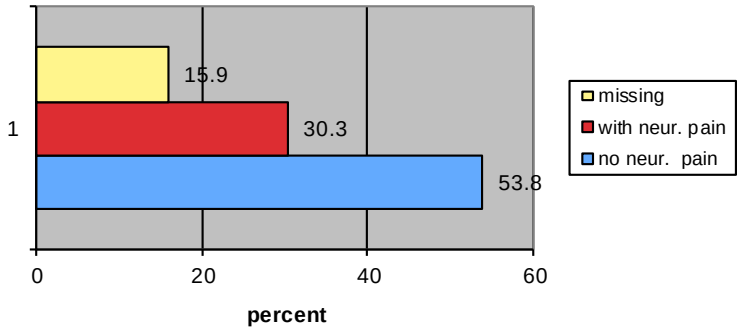


Table 12: Neuropatic.scale

Total score	Frequency	Percent
0	25	18.9
1	12	9.1
2	22	16.7
3	12	9.1
4	15	11.4
5	8	6.1
6	6	4.5
7	4	3.0
8	5	3.8
10	2	1.5
Total	**111**	**84.1**
Missing	21	15.9
Total	**132**	**100**

H. EQ-5D Scores on Admission

Patients on 1st admission **mobility** statistics are as follows: 21.2% (28 patients) had no mobility problems; 47.7% (63 patients) had some mobility problems and 25.8% (34 patients) had severe mobility problems.

On admission patient **selfcare** picture is as follows: 13.6% (18 patients) of research population had no problems with selfcare; 47.7% (63 patients) had some problems and 33.3% (44 patients) had severe problems with selfcare.

Patients' **usual activity** picture statistics is as follows: 9.8% (13 patients) had no problems, 36.4% (48 patients) had some problems and 48.5% (64 patients) had severe problems with usual activity.

Pain/Discomfort picture of patients on admission looks like this: 8.3% (11 patiens) of patients had no problems with pain/discomfort; 46.2% (61 people) had some problems with pain/ discomfort, and 40.2 % of patients had severe problems.

The final component of EQ-5D is **anxiety/depression**, and the picture is as follows: 12.9% (17 people) had no Anxiety/depression problems; 39.4% (52 people) had some problems and 42.4% (56 people) had severe problems with anxity/ depression.

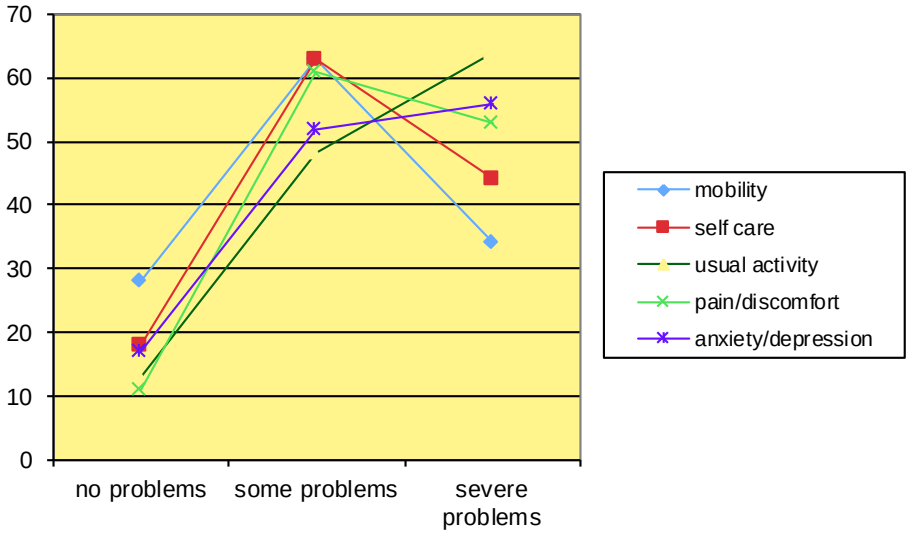
Missing scores in all categories are the same – 5.3% (7 patients) of research population.

All the above mentioned figures are combined in Table 13 and graphically showen in Chart 6.

Table 13: Patients EQ-5D Scores on Admission

EQ-5D	mobility		self care		usual activity		pain discomfort		anxiety.depression	
	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
no problems	28	21.2	18	13.6	13	9.8	11	8.3	17	12.9
some problems	63	47.7	63	47.7	48	36.4	61	46.2	52	39.4
severe problems	34	25.8	44	33.3	64	48.5	53	40.2	56	42.4
Total	**125**	**94.7**	**125**	**94.7**	**125**	**94.7**	**125**	**94.7**	**125**	**94.7**
Missing	7	5.3	7	5.3	7	5.3	7	5.3	7	5.3
Total	**132**	**100**	**132**	**100**	**132**	**100**	**132**	**100**	**132**	**100**

Chart 6: EQ-5D on admission



I. Medications used by subjects

Types of medications	Medication	Types of medications	Medication
Opioid Analgesics	Morphine. sulf	***Stroke treatment***	Izodinit
	Morphine Hyd.		Mecetam
	Metadone	***Heart Medications***	Digoxin
	Omnopone		Nifidipine
	Tramadol (Ultram)		Panangin
	Fentanil		Amlodipin
	Hydrocodeine	***Ointments***	Sinoflan
	Dolex		Levomikol (antibiotic)
	Solpadein	***Antihistamine***	Suprastin
Non-opioid Analgesics	Paracetamol		Diazolin
	Simbalta		Dimedrol
	Analgin		Veloxin
	Noshpa	***SmoothMuscle Relaxant***	Platifilin
	Spazmalgon (Spasmolytic)		Eufilin
	Citramon	***Antibiotics***	Fortum
	Askofen		Metronidazol
Anti-Convulsives	Pregabalin (Lyrica)		Moxifloxatin
	Gabapentin (Tebantin)		Clofazimin
	Diakarb		Cikloserin
	Carbamazepine		Amoxiklak
Sedative Hypnotics	(Ph)Fenobarbital	***Anti-fungals***	Fluconasol
	Diazapam	***Digenstive Enzyme***	Kreon
	Lorazepam		MezimForte
Steroids	Prednizolon	***Asthma Tx***	Salbutamol
	Dexamethasone		Teotard
	Bikloforte	***Herbal Preparations***	Persen
Non-steroidal anti-inflamatory drugs	Ketonal		Valeriana
	Prestans	***Anti-diarrhea***	Linex
	Ibuprofen	***Anti-gas***	Espumizan
	Nimisil (cox2)	***Prostate treatment***	Omnic
	Diclofenac	***Anti-hypertensive***	Concor
	Dexalgin	***Anti-Tuberculosis***	Pirazinamid
	Meloflam	***Bisphosphinates (bone)***	Apenodronat
	Loxidol	***Dietary Enzyme/supplement***	Lucetam
Diuretics	Lazix		Kavinton
	Veroshpion	***Hemostatic agents***	Dicinon
Anti-depressants	Amitripsilin	***Other medications***	Fillifort
Laxatives	Bisacodyl		Dolpas
	Lactuloza		Leron
	Dufulac		Cordiceps
	Senadexin		Medulak
Anti-emetics	Cerukal		Sesate
	Zofran		
Anti-diabetics	Diabeton		
	Glibinklamid		
ACE Inhibitor (beta blockers	Enalapril		
	Atenolol		
	Kaptopril		
Proton Pump Inhibitor	Omeprazol		
	Kvamatel (pepcid)		
	Omes		

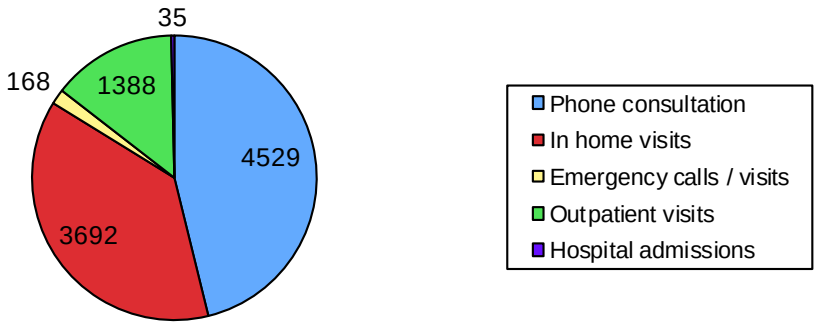
III. Services delivered to patients

All sites together gave consultations by phone a total of 4529 times, doctors and nurses visited patients 3692 times, had 168 visits to patients by emergency calls, patients visited to doctors 1388 times, and finally 35 patients were given hospital treatment (See Table 14 and Chart 7).

Table 14: Total number of services provided to patients

Total number of services provided from July 1st, 2011 to June 30th, 2012					
Site	**Phone consultation**	**In home visits of doctors and nurses**	**Emergency calls / visits**	**Outpatient visits**	**Hospital admissions**
Muratsan	680	722	2	12	3
Muratsan children	Missing	161	0	2	2
Ararat	2921	984	6	291	3
Vanadzor	111	1185	44	99	10
Oncology	817	640	116	984	17
Total	**4529**	**3692**	**168**	**1388**	**35**

Chart 7: Total # of provided services



1. In home visits of doctors and nurses

All patients' days per each site compose: Muratsan Center – 3801 days for its 37 patients; Ararat Hospital - 3713 days for its 30 patients; Vanadzor Hospital – 3770 days for its 29 patients, and Oncology Center – 4543 days for its 37 patients (see Table 15).

Table 15: Total patient days per site	
Muratsan	3801
Ararat	3713
Vanadzor	3770
Oncology	4543

According to Table 16 the highest amount of visits were done by Vanadzor Hospital doctors and nurses in April (147 times) and Ararat Center in November (143 times). The lowest amount of visits were done by Ararat Hospital doctors and nurses in July (23 times) and in August (32 times). In June the highest number (374 times) of in home visits of doctors and nurses is recorded.

The mean of all in home visits is **923** times, and the median for doctors and nurses in home visits is **934** times.

Table 16: Doctors and Nurses in home visits by site and by month													
Month/ Site	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**Total**
Muratsan	67	63	62	67	39	76	75	52	68	94	107	113	**883**
Ararat	23	32	70	131	143	102	93	85	82	61	79	83	**984**
Vanadzor	62	68	92	90	88	85	90	67	136	147	137	123	**1185**
Oncology	38	58	58	52	72	46	32	60	65	55	49	55	**640**
Total	**190**	**221**	**282**	**340**	**342**	**309**	**290**	**264**	**351**	**357**	**372**	**374**	**3692**

The average per day per site visits of doctors to the patients was calculated and the results are: Muratsan Center – 0.232 per day visits to the patient; Ararat Hospital – 0.255 per day visits; Vanadzor Hospital – 0.314 per day visits; Oncology Center – 0.14 pre day visits to the patient.

The days occur between visits to patients by site are: Muratsan Center doctors' days between visits to the patients are 4.304; for Ararat Hospital it is 3.773; for Vanadzor Hospital - 3.181 doctors' days between visits and for Oncology Center 7.098 days. (See Table 17).

Table 17		
	Days between visits by site	**Per Day per site visits**
Muratsan	4.304	0.232
Ararat	3.773	0.255
Vanadzor	3.181	0.314
Oncology	7.098	0.14

2. Received emergency calls

The highest number of emergency calls (emergency call is when a patient is in critical situation and calls to the Hospital to ask doctors to come and give first aid (medical assistance) at home) was recorded in National Oncology Center – 116 calls in 12 months, Vanadzor Hospital comes next with 44 calls, Ararat Hospital with 6 emergency calls and Muratsan hospital with 2 calls (see Table 18).

The highest number of emergency calls was recorded in November (35 calls) due to 28 Oncology Center calls and 7 Vanadzor Site emergencies. The lowest number of calls – 2 calls was recorded in September month in Vanadzor Hospital.

The mean of all emergency calls is **42**.

Table 18: Number of emergency calls by site and by month

Month/ Site	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	Total
Muratsan	2	0	0	0	0	0	0	0	0	0	0	0	**2**
Ararat	0	0	0	2	0	0	0	3	1	0	0	0	**6**
Vanadzor	0	0	2	0	7	5	0	2	4	7	8	9	**44**
Oncology	8	26	0	16	28	0	22	0	16	0	0	0	**116**
Total	**10**	**26**	**2**	**18**	**35**	**5**	**22**	**5**	**21**	**7**	**8**	**9**	**168**

3. Hospital admissions by site

All hospitals together had 35 patients treated in hospitals: 5 patients were treated in Muratsan Center, 3 patients in Ararat site, 10 patients in Vanadzor Site and 17 patients in Oncology Center.

Results show that the highest amount of patients admitted to hospitals was in September month (7 patients) and the lowest amount was in December and February (0 patients). (See Table 19).

The mean of all hospital admissions is **8.75**.

Table 19: Number of patients served in hospitals by site and by month

Month/ Site	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	Total
Muratsan	0	0	3	0	0	0	1	0	1	0	0	0	**5**
Ararat	0	0	2	0	0	0	0	0	0	0	1	0	**3**
Vanadzor	1	1	0	0	0	0	0	0	0	3	3	2	**10**
Oncology	3	5	2	2	5	0	0	0	0	0	0	0	**17**
Total	**4**	**6**	**7**	**2**	**5**	**0**	**1**	**0**	**1**	**3**	**4**	**2**	**35**

Out of 35 patients treated in hospitals 25 valid answers were reported for length of service of the patients. For these 25 patients average length of hospital admission (mean) by site looks like this: Muratsan Center has the longest days of hospital admission- 126; Ararat Hospital has 29 days; Vanadzor Hospital- 13.25 days and Oncology Center – 22.27 days (see Table 20 and Chart 8).

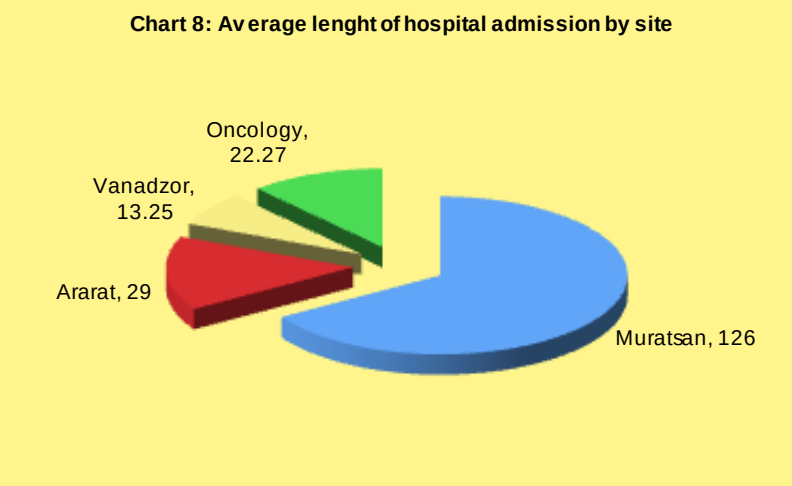


Table 20: Average length of admission by site	
Muratsan	126
Ararat	29
Vanadzor	13.25
Oncology	22.27

4. Doctors' and nurses' phone consultations

All sites together gave 4529 phone consultations to their patients. The highest amount of consultations was given to Ararat site patients – 2921 times, and the lowest amount was recorded in Vanadzor site – 111 times.

The highest amount of consultations all sites together was given in December month – 681 times and the lowest amount in July – 96 times (see Table 21).

The mean for given phone consultations is **1132,25** times.

Table 21: Number of phone consultations by site and by month

Month/ Site	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	Total
Muratsan	55	60	75	65	33	48	45	38	40	73	70	78	**680**
Ararat	0	0	63	129	285	494	594	364	330	288	190	184	**2921**
Vanadzor	9	6	9	3	15	12	6	3	9	12	15	12	**111**
Oncology	32	85	52	12	22	48	36	72	22	76	126	234	**817**
Total	**96**	**151**	**199**	**209**	**355**	**602**	**681**	**477**	**401**	**449**	**401**	**508**	**4529**

5. Outpatient Visits

Total amount of times patients visit sites is 1388. The highest amount of visits were done to Oncology Center- 984 visits, next comes Ararat site with 291 visits, then Vanadzor Hospital with 9 visits and finally Muratsan Center with 14 visits.

The most visits were done in November month – 282 visits, and the least visits were done in July – 51 visits.

The mean of visits is **347**.

Table 22: Number of outpatient visits by site and by month

Month/ Site	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	Total
Muratsan	0	0	0	2	0	5	0	4	0	2	0	1	**14**
Ararat	24	32	104	43	20	19	17	3	8	7	7	7	**291**
Vanadzor	9	6	4	4	4	6	4	8	10	10	20	14	**99**
Oncology	18	20	48	52	258	64	64	86	114	126	76	58	**984**
Total	**51**	**58**	**156**	**101**	**282**	**94**	**85**	**101**	**132**	**145**	**103**	**80**	**1388**

If we combine the home visits, clinic visits, and emergent calls/visits to include all face to face contacts we get a total of 5,248.

Table 23

All face to face contacts combined

	In home visits	Outpatient visits	Emergency calls	Total
Muratsan	883	14	2	**899**
Ararat	984	291	6	**1281**
Vanadzor	1185	99	44	**1328**
Oncology	640	984	116	**1740**
Total	**3692**	**1388**	**168**	**5248**
Mean	923	347	42	**1312**

Average number for all face-to-face contacts is **1312** times.

Table 24

All face to face encounters combined

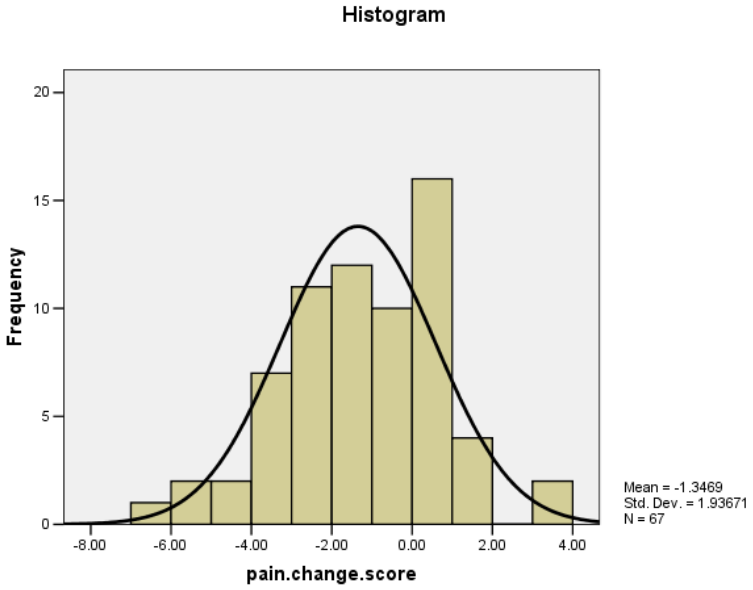
	Days between visits by site	Per Day per site visits
Muratsan	4.228	0.237
Ararat	3.773	0.345
Vanadzor	2.898	0.352
Oncology*	1.155	0.866

*includes emergency visits to patients not enrolled in the pilots

IV. VAS Pain scale mean change scores

On Admission mean pain scale score for all sites was 5.69. Pain change average score (mean) for all sites is -1.35, and median score is -1.19.

Muratsan Center patients' pain change scores were shown at the Table 23 below. Overall 18 valid answers were recorded. As we can see in majority cases pain score went down. Mean pain change score for Muratsan Center paitients is -0.55, which means that overall pain score went down. Median is 0.



For Ararat site 16 valid answers were recorded and the mean pain change score is -1.43, median is -1.39 (see Table 24).

Table 25

Site	N of valid answers	Pain initial scores	Pain change score
Muratsan	1	0	0
	2	7	0.75
	3	9	-1.5
	4	10	-2.39
	5	7	0.07
	6	8	-0.06
	7	0	0
	8	6	-2.95
	9	0	0
	10	0	0
	11	0	0
	12	0	0
	13	4	0
	14	7	0.75
	15	4	-0.84
	16	10	-1.75
	17	9	-1.5
	18	10	-0.5

Table 26

Site	N of valid answers	Pain Initial scores	Pain change score
Ararat	1	8	1
	2	7	-3.75
	3	7	-3
	4	7	-6
	5	5	-1.44
	6	1	-0.33
	7	2	-1.75
	8	9	-1.33
	9	2	0
	10	4	1
	11	4	-2.58
	12	3	0.5

	13	8	-3
	14	2	1.25
	15	10	0
	16	7	-3.5

21 valid answeres were recorded in Vanadzor Hospital and pain change mean score is -1.3, median is -1.8 (see Table 25).

Table 27

Site	N of valid answers	Pain Initial scores	Pain change score
Vanadzor	1	6	-3.94
	2	2	1.25
	3	6	-1.4
	4	3	3.05
	5	5	-3.09
	6	3	-1.96
	7	6	-2.3
	8	6	-2.03
	9	7	-4
	10	2	-0.31
	11	1	0.5
	12	4	-1.09
	13	6	-2.89
	14	4	0.4
	15	4	3
	16	4	-3.3
	17	6	-0.61
	18	10	-4.5
	19	7.5	-1.8
	20	7	-1.81
	21	1.5	-0.5

12 valid answeres were recorded in Oncology Center and the mean score is -2.5, median is -2.26 (see Table 26).

Table 28

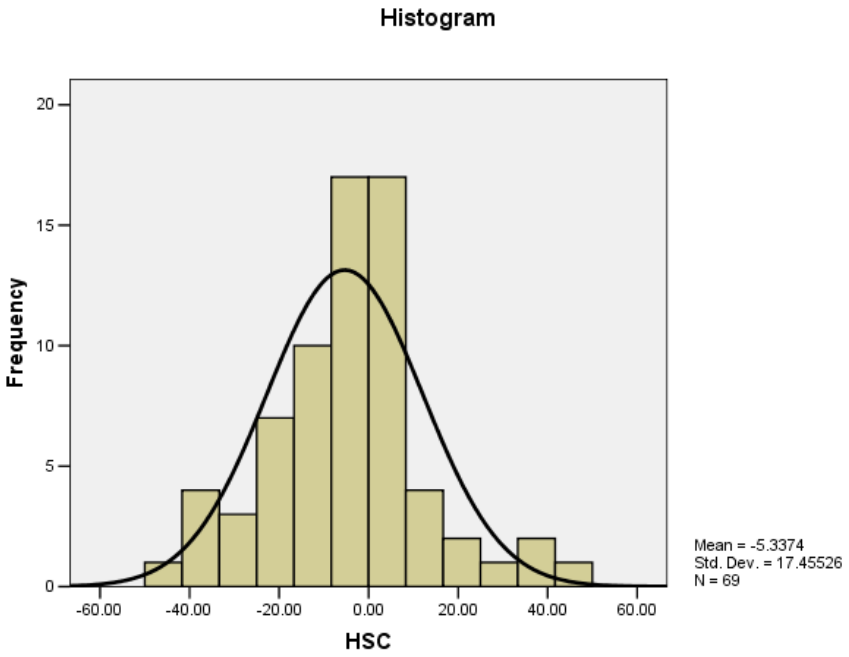
Site	N of valid answers	Pain Initial scores	Pain change score
Oncology	1	4	0
	2	5	-3.76
	3	5	-4.56
	4	3	-2.39
	5	4	-2.14
	6	2	-0.33
	7	3	-1.19
	8	8	-6.34
	9	8	-5.18
	10	4	-2.83
	11	2	-0.47
	12	2	-0.87

An additional sub-analysis was done to examine the 4 patients that were allowed to use methadone for pain relief near the end of the pilot projects. This analysis shows superior pain outcomes for methadone than with usual pain medication. Average reduction in pain is -2.84, which while a small sample, is much greater than the average of -1.35 for all patients in the pilot. The -1.35 result included these three patients.

Table 29 Patients receiving methadone for pain relief

Site	Pain score on admission	Mean Pain score after admission	Pain change score
Vanadzor	6	3.97	-2.03
Ararat	7	4	-3.00
Ararat	7	3.5	-3.50
Ararat	5	Still on service	Patient reports poorer pain control after stopping methadone

V. Health Status change mean scores by site



Patients Health Status mean on admission was 47.69. Health status mean change score for all sites is -5.34 and median is -4.29.

For Muritsan Health Status mean score is – 18.61, and median is – 17. This is not a positive change and health state of the patients went down. 11 valid answers were recorded (see Table 30).

Table 30

Site	N	Health Status Change
Muratsan	1	-36.67
	2	-40
	3	-43.75
	4	-24.44
	5	-17
	6	-2.86
	7	-20
	8	-5
	9	-10
	10	0
	11	-5

For Ararat site Health Status mean change score is -10.53, and median is – 7.5. Again Health state of Ararat hospital patients went down (see Table 31).

Table 31		
Site	N	Health Status Change
Ararat	1	-20
	2	-7.5
	3	-7.5
	4	-40
	5	-8.89
	6	0
	7	-0.56
	8	2.5
	9	0
	10	-6.67
	11	10
	12	-40
	13	-12.5
	14	-4.29
	15	-10
	16	2.86
	17	-3.33
	18	0
	19	0
	20	-10
	21	-28
	22	-30
	23	-30
	24	-20
	25	-10
	26	0

In Vanadzor site 22 valid answers were recorded. Health State change mean is 3.86, and median is 0.45. Here positive change is recorded (see Table 32).

Table 32		
Site	N	Health Status Change
Vanadzor	1	10.06
	2	-23.12
	3	-3.2
	4	0.8
	5	-16.03
	6	-4.2
	7	-5.2
	8	25.82
	9	-5.47
	10	2.25
	11	10.35
	12	2.67
	13	20
	14	34.4
	15	-13.4
	16	-7.8
	17	48.7
	18	-12.86
	19	20.29
	20	0.4
	21	0.5
	22	0

Oncology Center patients' Health State change score mean is 2.54 and median is 1.48 (see Table 33).

Table 33		
Site	N	Health Status Change
Oncology	1	-16.67
	2	38.71
	3	-8.12
	4	15.95
	5	3.65
	6	-3.11
	7	3.25
	8	7.42
	9	-0.29
	10	-15.43

VI. Patients' EQ-5D mean change scores

The mean score for mobility on admission was 2.05.

Mobility mean score change (MMSC) for Muratsan Center patients is 0.17, and median is 0; For Ararat Hospital the MMSC is 0.34 and the median is 0.07; for Vanadzor Hospital th MMSC is 0.1 and median is 0, and finally for Oncology Center the MMSC is -0.4 and median is -0.12.

The mean score for self care on admission was 2.21.

Self care mean score change (SCMSC) for Muratsan Center patients is 0.13 and median is 0; for Ararat Hospital it is 0.4 and median is 0; for Vanadzor Hospital SCMSC is -0.9, median is 0, and for Oncology Center it is -0.21 and median is -0.18.

The mean score for usual activity on admission was 2.41.

Usual Activity mean change score (UAMCS) for Muratsan Center is 0.05; for Ararat site it is 0.13; for Vanador Hospital it is -0.11 and for Oncology Center it is 0.03. All median change scores are 0.

The mean score for pain/discomfort on admission was 2.34.

Pain/Discomfort mean change score for Muratsan Center is -0.17; for Ararat site it a -0.03; for Vanadzor Hospital the change score is -0.08; and for Oncology Center it is -0.17. For all first three cases the median change score was 0 and for Oncology center it is -0.15.

The mean score for anxiety/depression on admission was 2.31.

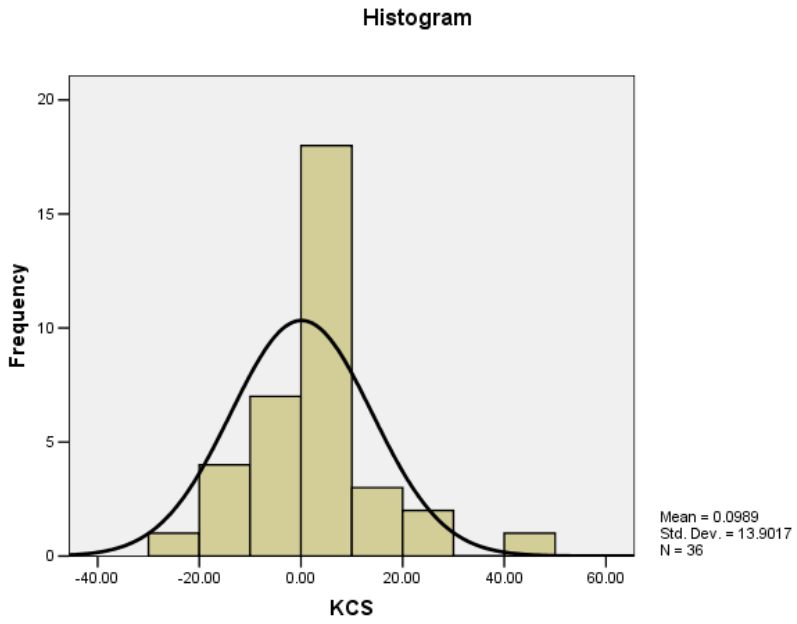
Anxiety/Depression mean change score for Muratsan Center is -0.2; for Ararat hospital 0.17, for Vanadzor site the score is -0.44 and for Oncology Center it is -0.28. The median change score for Muratsan and Ararat sites is 0, for Vanadzor site is -0.5 and for Oncology Center the score is -0.43 (see Table 31).

Table 34: EQ-5D components' change mean and median scores

Site	Mobility mean change score	Mobility median change score	Self care mean change score	Self care median change score	Usual Activity mean change score	Usual Activity median change score	Pain discom. mean change score	Pain discom median change score	Anxiety Depression mean change score	Anxiety Depression median change score
Muratsan	0.17	0	0.13	0	0.05	0	-0.17	0	-0.2	0
Ararat	0.34	0.07	0.4	0	0.13	0	-0.03	0	0.17	0
Vanadzor	0.1	0	-0.9	0	-0.11	0	-0.08	0	-0.44	-0.5
Oncology	-0.4	-0.12	-0.21	-0.18	0.03	0	-0.17	-0.15	-0.28	-0.43

VII. Patients' Karnofsky mean change scores

Patients all site Karnofsky score on admission was 46.16. Karnofsky change score mean for all sites is 0.09, and median is 0.



Karnofsky score score mean change for Muratsan Center is – 2.83, and median is 0 (see Table 35).

Table 35

Site	N	Karnofsky Score change
Muratsan	1	0.83
	2	-7.5
	3	-10
	4	-5.56
	5	-20
	6	-18.33
	7	0
	8	0
	9	6.67
	10	8
	11	5
	12	0
	13	10
	14	-10
	15	0
	16	-10
	17	0
	18	0

The mean change score for Karnofsky Performance at Ararat hospital is -5, and the median is 0 (see Table 36).

Table 36		
Site	N	Karnofsky Score change
Ararat	1	0
	2	0
	3	5
	4	-30
	5	0

For Vanadzor Hospital Karnofski score change mean is -6.2 and median is 0 (see Table 37).

Table 37		
Site	N	Karnofsky Score change
Vanadzor	1	0
	2	-18.62
	3	0

The mean change score for Karnofsky performance is 9.81, and mean is 7.79 (see Table 38).

Table 38		
Site	N	Karnofsky Score change
Oncology	1	20
	2	12
	3	49.23
	4	18.33
	5	0
	6	-0.77
	7	20
	8	-4.29
	9	3.57
	10	-20

Discussion

This report describes the results of a first year pilot project to introduce palliative care into the Armenian Healthcare System. A number of previous efforts to establish palliative care in Armenia were undertaken outside the government run healthcare system that had not been successful. Four pilot sites were established with funding from Global Fund under the Round 8 health systems strengthening program. The sites were chosen by the Ministry of Health of the Republic of Armenia to represent both geographic and operational diversity.

Each site was to have physician, nursing and psychosocial staffing. Staff at each site was selected and attended several training programs to learn basic palliative care including a week long ELNEC (end of life nursing education consortium) course and a week long EPEC-O (end of life physician education course – oncology version). In addition key staff were sent to a palliative care training center in Romania for 3 weeks of both classroom and bedside teaching. Additional training was conducted at several points throughout the first year of operation. We have not been able to accurately assess the level of competence of staff following the training. Based on observation it appears that the bedside training has had much more impact than the classroom teaching.

The lack of oral opioids has been a limiting factor in implementation of palliative care in Armenia. Injectable morphine, non-steroidal anti-inflammatory drugs, and some weak opioids are available but no oral immediate or slow release morphine or other strong opioids are available to date. Arrangements were made to allow the sites to use oral methadone for cancer pain relief. Special classroom and bedside training was provided on use of methadone along with bedside training at each of the sites. However access to oral methadone was achieved very late in the 12-month pilot project period.

A number of standardized measurement instruments were introduced early in the pilot project period so that there would be a method to measure both the level of severity of illness and symptomatology in the patient population and some of the outcomes of the palliative care services. These instruments are described in the methods section. Those used to describe the population included descriptive and service provision data, the performance status changes of the patient, the presence of neuropathic pain and the presence of anxiety and/or depression. Outcomes focused mainly on management of pain and changes in perceived quality of life.

Population on Admission - In examining the symptomatology of the 132 patients admitted to the palliative care pilots we note that most patients have an oncology diagnosis (78.5%) and that pain is a very significant problem (Tables 6 & 10). Only 5.3% of patients had no pain on admission and over 42 percent of the patients had pain at the severe level on admission, which is higher than usually seen in established palliative care services, and probably reflects the limited access to pain medicines generally in Armenia. Those suffering from difficult to manage neuropathic pain amount to over 30%, which is consistent with the advanced cancer population (Table 12).

In general we have a very sick population of patients with an average length of service of 64 days and median of 37 days though there is considerable variation by site (Table 5). These lengths of service are consistent with those seen by most hospice or palliative care services internationally. The average age of the patient population at almost 60 years (Table 3) is slightly younger than usual due to the inclusion of 9 children, and Karnofsky performance status at admission is slightly higher than usual (Table 7). In most palliative care services we don't see many patients with KPS scores greater than 50. In this sample about 24% of patients are above 50 on the KPS. In our sample 41% of the patients are still alive at the end of the pilot period. This raises questions about how decisions are made on admission to the palliative care

services. No strict admission criteria were adopted as we wanted to see what the needs were though emphasis in the training sessions was on prioritizing admission of patients with more severe symptom management needs.

In looking at the incidence of anxiety and depression in the study population (Table 8) we find that there are high levels of emotional distress with over half (51.5%) of patients meeting criteria for clinical anxiety and 56.1% screening for depression. This has implications for staffing, as the availability of mental health professional support in the palliative care teams was low and availability of mental health prior to palliative care was likely even lower.

Related to this is the use of the EQ-5D scores as a surrogate for quality of life in the population. Mean overall health scale scores for the population (Table 11) were just under 50 which is roughly equivalent to the average KPS score on admission. In looking at the breakdown of EQ-5D scores on admission by dimension (Table 13) we see that the rating of severe problems in usual activity, pain/discomfort and anxiety/depression are all over 40% in the population while mobility & self-care are lower ranging from 26% to 33%. It appears that patients are not hesitant to report on physical and psychological problems.

In general we are finding on admission that results from the various screening tools used seem to be consistent in describing a population with high levels of moderate to severe pain and with high levels of need to address anxiety and depression.

Service Delivery - Turning to the question of the impact of palliative care on these identified problems we can now look at the services delivered during the pilot. We first looked at all services reported (Table 14) including home visitation, phone consultations, emergency calls, outpatient visits, and hospital admissions. There was considerable variability in the service mix by site and we measured the visits by patient days of care in order to come up with a fair comparison by site. The average number of visits per day of care (Table 16) was highest at Muritsan and lowest at the Oncology Center, however the oncology center had the highest number of outpatient visits and emergency response calls. Ararat also had the highest number of phone consultations by far, so it seems the sites have chosen different methods of providing services to their populations. Why these differences are seen is something that needs further discussion and analysis. However lack of reimbursement for travel expenses to visit patients at home was a significant contributing factor. In looking at time between visits this varies from 3 to 7 days on average. These are low rates of visitation for a palliative care service. We need to examine the staffing mix provided and standards for volume of service delivery to create a standard for each program.

Emergency calls from the patient to the service to provide advice and home assistance in a period of crisis was recorded (Table 18). By far the Oncology Center received the most calls of this nature (116) during the pilot period. Vanadzor had 44 calls while Ararat and Muratsan had very few. This finding raises questions regarding the organization of services for palliative care. In general good palliative care seeks to prevent situations where families have to resort to emergency assistance. However it appears that the palliative care oncology services are vulnerable to receiving calls from desperate families not currently receiving palliative care calling for assistance, usually when a family member is near death. This finding needs validation and causes us to ask how the health care system can be modified to prevent a high level of need for such emergency services, which while helpful in a crisis are indicative of missed opportunity to relieve suffering.

Hospital Admissions – We may be pleased to see that the rate of hospitalization in the pilot projects was relatively low (Table 19). Only a total of 35 admissions occurred for pilot project patients in the pilot year for 132 patients. Most admissions occurred for the Oncology Center (17) followed by Vanadzor (10).

Some of these patients were admitted during their hospitalization and were unable to return home. The one problematic area concerned the length of hospitalization at Muritsan. Three of the patients hospitalized had lengths of admission well in excess of 100 days. The head of the pilot at Muritsan did not think the program had control over the discharge decision for these patients but we need to ensure that palliative care patients can be returned home and not continue to stay for extended hospitalization.

Phone Consultations – Calls to the patients and families by telephone were recorded during the pilot (Table 21). By far the Ararat program made the most phone contacts (2921), followed by the oncology center (817) and Murastan (680). While an important service, calls do not have the same impact as visiting the patients residence. We need to better understand how and why the sites use calls. They may have been due to limitation on staff's ability to make home visitation, which should be further examined.

Outpatient Visits – Many of the palliative care patients were in a position to come to the medical centers to see clinicians. Presumably these patients wanted to be seen in between home visitation. The Oncology Center had by far the most outpatient visits (984) followed by Ararat (291) and Vanadzor (99), while Muratsan had only 14 such visits recorded (Table 22). Again it is worth considering how sensible it is to have so many outpatient visits for a service caring for patients that are very ill. Most palliative care services have few such outpatient visits. For those with better KPS scores it may be more appropriate to provide these services in clinic, however this adds a burden to patients and family caregivers when the patient is home bound.

In discussion with the team at the National Oncology Center I learned that they actually served 82 patients. The additional 46 patients that were not officially enrolled were emergency patients that were actively dying and only received an emergency visit for help. The palliative care service at the National Oncology Center has a cooperative relationship with the Yerevan emergency services. When a cancer patient is calling them frequently they once a week give a list of these patients to the palliative care team. The team then contacts these patients and usually makes a home visit to assist. Often these patients are actively dying in pain. This usually relieves the emergency services of these calls. We see evidence of this service in the high levels of emergency calls/visits and clinic visits for the Oncology program.

Outcomes of Services Delivered

Pain - As noted previously the patient population is suffering from high levels of self-reported pain. Patients were asked to rate their pain level on each visit from 0-10 with 0 being no pain and 10 being the worst imaginable pain. This measurement approach is the most common method for determining patient reported pain internationally.

The mean admission pain scale score of 5.69 (on the 0-10 pain intensity scale) is quite high and for any patient with a pain score of greater than or equal to 4, intervention is usually indicted (Page 14). We conducted an analysis of changes to the pain scores post admission to evaluate whether palliative care, as delivered by these pilot sites, was effective in reducing levels of pain. A mean pain change score for each patient was calculated. This was done by averaging pain scores post admission and subtracting that average from the admission pain score. In most cases a reduction in pain was observed. This is a somewhat general indication of pain relief. A more sophisticated analysis could also look at individual pain intervals but for the purposes of the analysis of the pilots we began with this analysis. Overall all the patients in the pilots had their pain relieved by an average of -1.35 points on the 0-10 scale. There was variability in pain relief by site ranging from a decrease of -2.5 points for Oncology Center patient to -.055 for Muratsan patients (Tables 25-28).

While this is an indication of the positive effects of palliative care it does appear that there is considerable room for improvement in these scores. For all but four of the patients staff were only able to use currently available medications (see page 18), which usually included non-steroidal anti-inflammatory drugs, weak opioids such as tramadol, anti-seizure drugs, and injectable morphine, which was underutilized. Only four of the patients received methadone (3 at Ararat and 1 at Vanadzor). These four patients had pain on admission rated at 5-7 on the 0-10 scale. The outcomes of pain control in these patients were superior to other patients ranging from pain decreases of 2.03 to 3.5 points on the 0-10 scale. Average pain relief for these patients was 2.84 vs the 1.35 for all patients in the pilots (see table 29).

Of the 29 non-cancer patients admitted to the pilot sites most (82.74%) reported pain; 11 reported mild pain, 7 reported moderate pain, and 6 reported severe pain (5 had missing data). According to current rules none of these patients were allowed to receive opioid medication, which should have been available for the 13 with moderate to severe pain according to international guidelines.

EQ-5D Health Status – It is noted that Health Status scores on admission average below 50 on the 0-100 scale (Page 15). We lack normative data for this population but we would certainly expect to see declines in Health Status for patients during their stay in palliative care simply because these are patients that are in the process of decline due to life threatening conditions and the approach of the end-of-life. The average decline in health status reported for all subjects was -5.34 points. In a small number of cases Health Status improved under palliative care. We are using EQ-5D Health Status as one measure of quality of life under palliative care. We may speculate that health status would have declined much more without palliative care. In order to look at this possibility we would need to compare Health Status scores with a matched comparison group of patients not receiving palliative care.

The overall Health Status scores are less important than changes in the scores for the five individual dimension of Health Status. When we examine change scores in individual dimensions of the EQ-5D (Table 34) we find the following patterns: 1) small improvements in mobility, 2) little change in self-care scores, 3) small increases in usual activities, 4) small decreases in pain and discomfort scores, and 5) small decreases in anxiety and depression. These are positive indications for improved quality of life for palliative care patients however they warrant further analysis.

Karnofsky (KPS) – Like overall Health Status we expect that performance status as measured by the KPS would decline over time for palliative care patients. We do see a slight decline in tables 35-38 however there appears to be missing post admission data at most sites. The main contribution of the KPS scores is to show how compromised the patient population is in palliative care.

We used both the Hospital Anxiety and Depression Scale and the Neuropathic Pain Screening tool only on admission for screening purposes so no outcome of service data is necessary other than the pain and EQ-5D data available above.

EPEC-O and ELNEC Pre/Post Test Results - Results of the pre and post testing of physicians and nurses varied widely. For the physicians the range of correct answers in the pretest was from 8% correct to 80% with an average of 33.53% correct. Post test results improved for physicians to an average of 60.59% correct a 27.06% improvement, ranging from 12% to 100%.
For nurses the pretest question scores were higher with an average pretest score of 87.25%, ranging from 70.59% to 100% correct. Postest scores improved by 6.86% to an average of 94.12%, ranging from 91% to 100%. While the nursing pre/post test was 9 items the physician test was 34 questions of higher difficulty. It appears the nurses did better in knowledge acquisition. It also appeared that about half the physicians did poorly on both pre and post testing and would appear to need more remedial training.

Conclusions and Recommendations

Overall it appears that this pilot project was successful particularly in the following ways:

- The goal was to admit at least 120 patients, about 30 per site. 132 patients were admitted to palliative care under these pilots. There was some confusion regarding whether the number of patients was limited to 30 per site. The sites were encouraged to admit as many patients as they felt they could manage with the staffing levels.
- It was demonstrated that the pilot sites could collect and report important clinical data. While there was some missing data and there were some communication problems about what needed to be collected on which forms, the main objective of standardizing, measuring and reporting was accomplished allowing this important analysis to be done.
- Improvements in pain management were documented. In spite of the lack of access to strong oral opioids until the end of the pilot period improvement in pain outcomes were documented. These outcomes would likely have been much better if appropriate medications were available throughout the pilot.
- There were some indications that patients experienced improved quality of life outcomes, however this is a very difficult measurement issue and without a comparison group we cannot prove significant improvements.
- A large volume of service was delivered that varied in type by site. Many of these services are new to the health care system in Armenia and open a new dimension in how the sickest patients can be managed.
- The general view of the cost impact of palliative care indicates that home-based palliative care is more cost effective than inpatient care. Palliative care adds value to health care costs by shortening hospital length of stays and preventing unnecessary readmission. Some reorganizing of the health care system resource utilization is needed to ensure that palliative care is given more priority to help advance health care reform and utilization.

The following problems were noted during the pilots:

- There was a considerable effort made to provide palliative care education for the staff and it appears that nurses demonstrated relatively more knowledge than physicians in the pre/post test results, though there is considerable variability in these findings and it appears that classroom teaching is less effective than bedside teaching, particularly at the pilot sites.
- Lack of access to oral opioids continues to be a significant limiting factor in the ability of sites to control pain and other symptoms particularly at the end-of-life. Inability and reluctance to prescribe these opioids continues to be an issue.
- Palliative care staff does not appear to be working in an fully interdisciplinary fashion. More training and on-site consultation on team building is needed along with inclusion of more psychosocial staffing.
- To some extent home visitation was discouraged by a lack of travel expense reimbursement.
- There is a lack of psychosocial staffing for the pilot sites. Each site needs a social worker or psychologist to be available to provide more services focused on the patients needs, particularly those with anxiety or depression.

Recommendations

1. Ensure that all four sites have access to oral opioids, initially at least oral methadone but oral morphine when it is made available. A methadone use protocol and standards have been developed and need urgent approval. Pain outcomes for those patients utilizing methadone for pain relief were superior to currently available medications. Strong oral opioids, particularly immediate and slow release morphine needs to be registered for use in Armenia.
2. Allow all physicians working in palliative care programs to have prescription privileges to prescribe opioids and to make treatment recommendations to polyclinics.
3. Remove the restriction allowing opioid prescriptions for cancer patients only. As noted in the pilot a significant percentage of the non-cancer patients cared for had moderate to severe pain.
4. The main model for expansion based on the pilots experience is to locate new programs at regional and other medical centers where patients needing palliative care can be identified and referred for post discharge home based palliative care that is provided through the program based at the medical center. Care at home should be emphasized but patients needing short-term inpatient care should be cared for at the medical center for continuity of care. For ambulatory patients a combination of home care and outpatient clinic visits can be delivered.
5. Examine the mix of services to be provided under palliative are to include home visits, phone contacts, clinic visits, emergency calls, and hospitalization to determine how much of each of these services are needed. Incentivize home visitation.
6. Ensure that the staffs are reimbursed for travel expense for home visits. A flat reimbursement of 1500 AMD per home visit has been suggested. This will remove the disincentive to make home visits needed by the patients.
7. Conduct an audit of the sites to measure to what degree they are meeting the new palliative care standards that have been proposed.
8. Standardize staffing and caseloads at the pilots. Given the current staff remuneration there should be a monthly caseload of 10 active patients per full time equivalent staff, consistent with current standards. Since staff work part time after their usual clinical duties and on weekends it appears that each physician or nurse is working about 1/3 to 1/2 time in palliative care and there are four staff positions at each program. Thus there are only between one and 1/3 and two full FTE's working at each site. Therefore we need to see a daily/monthly census of at least 15 patients. In addition we should expect to see at least 30 visits per week for these 15 patients. This is an increase in the number of visits seen during this pilot. What is needed is to incentivize home visitation over emergency calls and clinic visits. Phone calls to the patients and families are very supportive but do not replace visits.
9. Pilot sites need to continue to meet regularly to share experience and best practices.
10. More bedside teaching needs to be provided on-site at the pilots.
11. The pilots need support to be able to conduct palliative care teaching activities for health professionals, especially those that will work in new pilot sites.
12. Pilots need adequate supplies and equipment for palliative care. A humanitarian supply of equipment and supplies is being arranged however budgets should include support for medical equipment and supplies.
13. Continue the pilot projects for another year to establish the programs as models for replication throughout the health care system. It is most important to have well functioning palliative care programs that can be used as sites for bedside teaching for new services being developed in the regions. New locations for additional pilot projects should be identified to begin to plan for their training and implementation.
14. Align the pilot projects and palliative care generally with the new emerging national strategies and concept papers for oncology and health care generally.