Use and Verification of Primary Care Performance Indicators

Developed by International STTA Frank Feeley, Health Finance Specialist, Boston University School of Public Health for Primary Health Care Reform Project

June, 2009

DISCLAIMER

The author's views expressed in this report do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Primary Healthcare Reform Project
3A/1 Aghbyur Serob Street
Yerevan 0019, Republic of Armenia

Phone: (37410) 261312
Fax: (37410) 267526
www.phcr.am

TABLE OF CONTENTS

ACRONYMS 3
EXECUTIVE SUMMARY 4
OBJECTIVE 6
BACKGROUND 6
IMPLEMENTATION SCHEDULE 7
PLANNED INFORMATION FLOWS 8
STRUCTURE FOR QUALITY IMPROVEMENT IN PRIMARY CARE 8
STAKEHOLDER CONCERNS 9
SYSTEM RECOMMENDATIONS 11
Monitoring of Care 11
Verification of Performance Measures 12
Responsibilities 15
Critical Actions 16
APPENDIX 1. LIST OF PERFORMANCE INDICATORS /TO BE LINKED WITH FINANCING/ 18
APPENDIX 2. LIST OF ADDITIONAL MONITORING INDICATORS 21
APPENDIX 3. PRIMARY HEALTH CARE SERVICE PROVISION ENCOUNTER FORM N002 23
APPENDIX 4. TRAINING SCHEDULE FOR IMPLEMENTATION OF ENCOUNTER SYSTEM 26

ACRONYMS

AMD	Armenian Dram
ANC	Antenatal Care
CHD	Coronary Heart Disease
GDP	Gross Domestic Product
FP	Family Physician
HH	Household
MTEF	Medium Term Expenditure Framework
OE	Open Enrollment
PBR	Performance Based Reimbursement
PHC	Primary Health Care
PHCR	Primary Health Care Project
SHA	State Health Agency
WHO	The World Health Organization

EXECUTIVE SUMMARY

SHA has been clear on the need for a method of verifying facility claims for payment under the performance incentive reimbursement system. Concern about possible falsification of such reports is the reason that performance based reimbursement has been delayed until 2011, when performance data should be available from the MIDAS III primary care encounter system. In preparation for this, PHCR reviewed currently planned information flows and suggests techniques for selecting those facilities to be audited and the reviews necessary to verify claimed performance.

Key Findings

1. There is no current plan to transmit MIDAS III encounter data from SHA regional offices to the marz/Yerevan health departments. This is because the encounter data base contains "personalized information" about diagnosis and treatment. SHA has a right to this because it pays claims; MOH allegedly does not.

2. MIDAS III performance data should be a vital part of the MOH quality improvement system

3. Arrangements must be made to provide aggregate and comparative data from the encounter system to each marz health department. The data should then be distributed to the responsible marz quality coordinator and to each facility

4. Audit/verification of reported performance measures should be done selectively. Verification techniques are fairly straightforward, and are described in the report for each performance indicator. These can be implemented as a selective add-on to existing SHA audits of fee-for-service payments at primary care facilities.

5. By the middle of next year, SHA can field test the verification procedures and add to their audit manual.

6. At the moment, the Government has not budgeted for continuation of salaries for quality coordinators after the end of the PHCR project. Budget provision should be made for this, and for maintenance and updating of MIDAS III at the State Health Agency

7. A full year of MIDAS III performance data from 2010 is critical to making performance payments in 2011. If payments are not made, the momentum of the quality improvement system will be lost. There is a danger that any slippage in installation of MIDAS III will result in backlogs for key entering encounter forms which cannot be cleared with normal staffing at primary care facilities. Consideration should be give to budgeting for a contingency, at PHCR or the marz health department level, to pay for overtime required to clear such backlogs.

As a result of our review, we recommend that PHCR work to integrate the MIDAS III performance reports into the MOH quality improvement system. This will require

- Obtaining immediate commitment from SHA to provide aggregate MIDAS reports to MOH.

- Using the MIDAS III reports in the quality improvement system at MOH. This may require some additions to the quality improvement manual developed by PHCR.

- Obtaining Government of Armenia budget commitment to follow on funding for quality improvement coordinators and maintenance of the MIDAS III system

- Pressing ahead with training for the encounter form and MIDAS III data entry at all facilities. Start up of the MIDAS III system on December 31 is critical.

As MIDAS III reports become available next year, PHCR can work with SHA to test the field verification measures and include these in an SHA audit manual.

OBJECTIVE

Identify procedures and actions necessary to improve reliability and impact of performance indicators used for monitoring and performance based reimbursement (PBR) of primary health care providers in Armenia.

BACKGROUND

After extensive discussions and several iterations over the last three years, and with the assistance of the PHCR project, the Government of Armenia has agreed 10 performance measures (Appendix One) that will be linked with primary care financing. An additional set of measures (Appendix Two) will be used for monitoring performance. Starting in 2011 (based on 2010 data), primary health care facilities may receive a portion of their payments from the State Health Agency based on the extent to which they meet or exceed targets for each indicator. The performance measures include maternal and child health services but emphasize care for chronic diseases. Immunization rates have traditionally been monitored through reports to the San-Epidemiological service and maternal and child mortality is monitored by the Ministry of Health. But there has been little effort to monitor or compare performance in the treatment of chronic disease----an extremely important aspect of primary care as the population ages.[1]

While a computerized system (MIDAS) is used by the State Health Agency (SHA) for the reporting and payment of hospital services, there is no computerized system for the reporting of information on care delivered in the primary care system. Primary care facilities submit a variety of manually generated reports (immunization rates, infectious disease incidents and prevalence, morbidity reports, visits and referral statistics, etc.), but there has been no standard reporting about the care actually delivered to all patients. Such a system requires an "encounter form," which is filled out at the time of the visit with information on the patient and critical aspects of the diagnosis and care provided. The Ministry of Health has required since 2006 that primary care facilities maintain individual medical records for each patient, but the information in such records is not readily aggregated without a computerized encounter form.

A computerized encounter form (Appendix Three) has now been developed by a PHC working group (PHC Reporting and Streamlining) convened by the MOH and assisted by the PHCR project. The group includes representatives of the Ministry of Health, the State Health Agency, Yerevan Municipality Health Department, and various Policlinics. Not every visit will generate an encounter form. For incidents of infectious disease, a single encounter form will include the initial visit and any follow ups through the course of the infection. Each preventive care visit will generate an encounter form. Procedures have been developed so that multiple visits for ongoing monitoring and treatment of a chronic illness can be recorded on a single encounter form. This will reduce the number of encounter forms which must be generated and entered into a computer system. PHCR analysts have estimated the number of encounter forms generated each year in typical primary care facilities, and the amount of time that will be necessary for the clinicians to complete the form and for facility staff to key enter the data. Their estimates suggest that this workload can be handled by existing facility staff.

The PHCR project has recently signed a contract with the Mergelyan Institute to program a revision of the MIDAS system (MIDAS III) which will create a data base from the encounter

[1] Population estimates from 2004 suggest that 32.1 % of the population actually resident in Armenia is elderly, twice the proportion of the population under 15 (2007-2009 MTEF).

forms and provide reports on the specified performance measures. The MIDAS III system will also report some additional monitoring measures not tied to performance payments. It can generate a variety of activity statistics and some of the routine reports which are currently created manually by each primary health care facility.

A critical element in the new primary care information system is data on the patient population under treatment at a facility. Armenia is in the process of transition from paying primary care facilities based on the nominal population of the assigned cachment areas to a system in which the facility is paid according to the number of patients who actually enroll to receive care at the facility. From this list of enrolled patients, disease registers and the denominator of each performance measure can be developed. It is hoped that capitation payments to primary care facilities will be based on this enrolled population. Although the State Health Agency has been reluctant to make this transition, PHCR will continue to work with SHA towards the goal of basing 2010 payments, at least in part, on the enrolled population.

The information system to register the enrolled population is already in place. Supported by funds and technical assistance from the PHCR project, an Open Enrollment data base has been created for the entire country. Facilities enroll individual patients for primary care, recording individual identifiers and demographic data. This information is passed to the marz[2] health department where it is stored and updated, and apparent duplicate registrations resolved. The marz data bases of enrolled patients are transmitted to an office in the Ministry of Health which is charged with eliminating duplication across marzes. The number of enrolled patients now exceeds 85% of official estimates of the population of Armenia.

The MIDAS III system is designed to integrate the Open Enrollment, Encounter and Hospital sub- systems. Information on the MIDAS III encounter forms will include the patient identifiers used in the Open Enrollment system. Denominators for performance measures will be derived from the Open Enrollment lists of each facility.

IMPLEMENTATION SCHEDULE

The software development contract calls for the Mergelyan Institute to deliver the MIDAS III system, including specified reporting modules that include the performance measures. Testing of this system in a sample of PHC facilities is scheduled to be completed by the end of August, 2009. The PHCR project has developed an intensive training program to be implemented from September to December 2009 (Appendix Four). This will teach primary care clinicians how to complete the encounter form, including the rules for consolidating multiple visits into a single encounter form. The intent is to begin recording on the encounter forms all patient visits which occur after December 31, 2009. This will provide fully computerized data for all visits in 2010, from which performance based payments could be made early in 2011.[3]

The implementation and training plan calls for administrative and clinical staff at primary care facilities to be trained in performance based financing/remuneration approaches and use of the encounter form by the end of 2009. Facility computer operators will also be trained on

[2] Subsequent references to activity at the marz level should be read to include the Yerevan Municipality Health Department

[3] See detailed discussion of the immunization performance indicator below. Special arrangements have been made to capture relevant immunization data for 2008 and 2009 in an Excel spread sheet which can be input to the MIDAS III system. This will permit calculation of the performance indicator for children reaching their second birthday in 2010..

key entering encounter data and ordering standardized reports. Data would be entered at the facility level (starting in January 2010). If the debugging of the MIDAS III system should slip, or the loading of software on primary care facility computers is not completed by December 31, then a backlog of un-entered encounter forms will develop even if clinicians are filling out the forms according to plan. The size of this backlog may not be readily apparent to senior managers in the Ministry.

PLANNED INFORMATION FLOWS

Information flows for Open Enrollment and Encounter Form data are very different (see Figure 1). When a patient enrolls at a primary care facility, the data is immediately entered into the computer by the responsible staff member. Periodically, CD's containing enrollment data are manually delivered to the marz office of the Ministry of Health. There, they are uploaded into a marz level data base of enrollees, and corrective action is taken for duplicate enrollments. The marz level data base of Enrolled patients is transferred by CD to the central office of the Ministry of Health, where the national data base is created and duplicates occurring across marzes can be resolved. The facility, marz and national Government each hold an updated data base of the enrolled patients for which they are responsible. The enrollment data is transmitted at the national level from MOH to SHA, where it can be used for payment by enrollment.

The encounter forms will be completed manually by the treating clinician. These will be collected by facility staff and entered into the MIDAS III system on the same computers used to create the Open Enrollment data base. Data entry will be done by the same clerical staff responsible for Open Enrollment. The facility should be able to create standard reports, including the performance measures, health and utilization indicators and related statistics from the encounter forms submitted on its enrolled patients. Periodically, CD's containing newly entered encounter form data will be manually transferred to the regional office of the State Health Agency. *None of the encounter data is transmitted to the responsible health department.*[4] To obtain reports from the MIDAS III encounter form data base, the Marz health department must request these from the regional office of the State Health Agency. Procedures for this transfer of aggregated information have apparently not yet been agreed.

STRUCTURE FOR QUALITY IMPROVEMENT IN PRIMARY CARE

With extensive help from the PHCR project, Armenia has built a well articulated system for quality improvement in primary care. Each facility has a quality improvement committee that includes administrators and clinicians. These committees perform focused reviews, respond to perceived quality problems, and serve as a forum to identify and implement procedures that will improve quality. This is an excellent structure to receive and act upon the performance reports available from the MIDAS III system.

A quality improvement committee has been established at each marz health Department and at the national Ministry of Health. At the marz level, quality improvement coordinators are appointed to work with the quality improvement committees at the facilities. Each coordinator

[4] The ostensible reason for this is that the encounter forms contain individually identified personal data about disease and health status. The State Health Agency is authorized to receive this data as a condition for making payments under the State Order. Under the current Government policy, the marz/Yerevan health departments can only receive "de-identified" data (without name or passport number) derived from the encounter forms by the SHA. All facilities hold individual health records which can be inspected by supervisory staff from the marz offices, so it may be possible for MOH staff to use medical record numbers in "de-identified" MIDAS reports to review particular anomalous cases.

is an active clinician who deals with 4-5 facilities, providing guidance as the facility level committee identifies and addresses quality problems. The marz/Yerevan health departments are committed to providing administrative support for these quality improvement coordinators. However, payments to the coordinators are coming from the PHCR project. Although PHCR has requested the Ministry of Health to institutionalize this system and budget for the quality coordinator payments, no such commitment has yet been made. PHCR ends in September 2010. Thus, if there are to be payments for the quality improvement coordinators in the last three months of 2010----a critical time as facilities complete the first year of eligibility for performance bonuses----this amount must be included in the 2010 budgets which will shortly be prepared..

At the moment, the quality improvement plans do not explicitly anticipate the use of information from the MIDAS system. However, the quality system already established would provide an excellent feedback loop for this information. Quality coordinators and marz quality improvement committees could use quarterly MIDAS III reports as an "early warning" of quality problems, and help facilities address deficiencies that result in below target performance on the measures used in bonus calculations. This would benefit both facilities and patients.

STAKEHOLDER CONCERNS

The State Health Agency expresses an understandable concern that facilities might tamper with data to improve their ratings on the performance measures, and thus increase reimbursement. SHA was particularly concerned that this would occur if performance measures were reported manually, and for this reason any payment of performance incentives has been delayed until the performance measures can be calculated by computer from the MIDAS III data base. This greatly reduces the risk that performance measures will be manipulated.

Even with the use of MIDAS III, SHA is concerned that performance payments be made only to those facilities that are actually performing as indicated in the MIDAS reports. SHA seeks suggestions on techniques for verification of performance measures. In other systems using performance based reimbursement for primary care (UK, Russia), this issue of verification has already been addressed. In the UK, for example, each primary care practice receives an annual supervisory visit from a team, including a patient representative, appointed by the Primary Care Trust. This team can review the data underlying reported performance measures. The detailed instructions for the complicated performance bonus system in the UK indicate how various indicators might be verified (see example in text box). Serious discrepancies revealed by this review would be referred to the NHS fraud office.

UK CHD Indicator 7
The percentage of patients with coronary heart disease whose notes have a record of total cholesterol in the previous 15 months

Reporting and Verification
Practices should report the percentage of patients on the CHD register who have a record of total cholesterol in the last 15 months.

In verifying that this information has been correctly recorded, a number of approaches could be taken by a Primary Care Organization:

1. Inspection of the output from a computer search that has been used to provide information on this indicator
2. Inspection of a sample of records of patients with CHD to look at the proportion with recorded serum cholesterol
3. Inspection of a sample of records of patients for whom a record of serum cholesterol is claimed, to see if there is evidence of this in the medical records.

SHA has expanded its field audit staff, and already visits primary care facilities for audit of some claims for fee-for-service reimbursement (drugs, laboratory tests). It should be possible to identify anomalous claims for performance based reimbursement from analysis of the MIDAS III data, and to include on-site verification or random audit into the reviews conducted by SHA regional audit staff.

Ministry of Health concerns about the performance based reimbursement system are less clear. There is an obvious concern about the workload on clinicians and administrative staff filling out and key entering encounter forms. This is why there was agreement to protocols which lump a number of visits into a single encounter form. Whether clinicians will follow these protocols easily remains to be seen; particularly when patients go back and forth between a primary care physician and a “narrow specialist” during a course of treatment which counts as a single “encounter.”

The reports available from the MIDAS III data base represent an extraordinary quality improvement tool for the health system. At this point, however, it does not appear that the Ministry of Health plans to make use of these reports in the quality improvement or supervisory system. This creates three problems

- Only SHA will have an idea if encounter forms are being timely created and entered into the MIDAS system. It will have to review the CD’s received to identify lags or gaps in the incoming data.
- Facilities can generate interim reports on their own performance, but should be explicitly encouraged to do so. They will have no idea how their performance compares with other facilities
- Marz/Yerevan health departments will not have any idea (until the year end reports are issued for reimbursement purposes) of the relative performance of different facilities. This makes it difficult to take corrective action mid-year to improve facility performance.

SYSTEM RECOMMENDATIONS

Monitoring of Care

Health Departments must receive interim reports from the MIDAS III system. Quarterly, each marz health department should receive from the regional office of the State Health Agency a copy of a report indicating the performance on each measure for each of its health facilities[5]. Preferably, facilities should be ranked according to their performance. Health Departments should also receive from the regional SHA office an indication of any backlog in the submission of encounter data. This might be done by showing the most recent dates of encounters logged into the data base for a facility, or by the number of encounters for the year to date compared to the number of enrolled patients. PHCR has estimates of the number of forms which can be expected each month for facilities with different levels of enrollment. These can be used by the Health Department/quality coordinators to determine if a facility is lagging in submitting encounter forms.

The reports from SHA should be provided to the quality improvement committee and coordinators through the support mechanism already established at the marz health departments. In addition to receiving the reports for the assigned facilities, the coordinator should receive reports for the entire marz so that s/he understands the facility's relative performance. Reports showing relative performance should also be provided directly to each facility administrator by the Health Department.

In many cases, the quarterly reports will not indicate compliance with the target even though the facility could reach the target by the end of the year. The facility must make additional efforts to get patients in for the required tests or procedures. But some reports will immediately indicate a failure to perform. For example, newly registered pregnancies will indicate the state of the pregnancy at registration. If the target for first trimester ANC is not being met, this will be immediately apparent.

For chronic disease indicators, both the absolute and relative performance on quarterly reports will be useful indicators. In general, the quarterly reports should build towards compliance in a linear manner---eg; if 80% of registered patients with a chronic disease should have a test in a year, 20% should have that test in the first quarter, 40% by the second quarter, etc. If a facility lags behind this rate, the quality improvement committee can discuss what must be done to improve performance-----further training for doctors, better procedures for test referrals, better recording on encounter forms, etc. The relative performance data will also be useful----the facility that lags behind its peers in the percentage of registered patients tested has the most to do to earn a performance bonus at the end of the year. The performance bonus offers a powerful "carrot" to improve performance, but it will do the facility little good if it learns of its shortfall only after the full year's data has been reported.

Figure 2 shows the recommended information flow from facility to SHA to the marz offices, with the feedback loop through the quality improvement coordinators.

[5] For measures that require a certain level of treatment/testing during a year, this can be reported year to date. If a facility is operating well, there should be a relatively linear progression through the quarterly reports to the year end performance value.

Verification of Performance Measures

Because performance measures will be calculated from MIDAS III encounter data by SHA computers, the risk of self-interested manipulation of reports by facilities is greatly reduced. In general, facilities will only be able to artificially improve the performance measures if they underestimate the denominator of the measure (the number of patients "at risk"-----children of a given age, enrollees with a chronic disease). Or by falsely reporting that various procedures have been performed when they have not. In some cases, the facility does greater harm to its reimbursement by not recording a patient in the denominator---by failing to enroll a new born child, for example, and thus not qualifying for an additional capitation.[6] However, a facility that underestimates the number of its enrollees with a chronic disease (diabetes, coronary heart disease, and hypertension) would see an improvement in its apparent performance. To guard against this, reviewers can pull a sample of records for the population at greatest risk (generally older age groups) and compare to the list of patients on the disease register[7]. If the medical records show patients with the disease that are not listed in the register, then the measure is suspect.

It should not be necessary to perform extensive reviews of this kind. Instead, they can be targeted. Facilities that fail to qualify for a performance payment obviously have problems in the quality of care, or data recording, or both, and have a financial incentive to address these problems. Performance measures are more likely to be suspect if a facility has a very high performance score. However, the UK National Health Service was surprised at how well primary care practices scored in the complicated performance reimbursement system. High scores may only be evidence of good care and the ability of good management to focus on those actions which increase facility reimbursement. Nonetheless, if a measure shows a remarkable change from earlier quarters to year end, this could be cause for review---a good reason to prepare quarterly reports and not wait for year end performance measures. Facilities which move, from year to year, from very poor performance to performance ratings that qualify for the highest incentives may be another suspect group.

It is possible that clinicians will be more thorough in completing encounter forms than in maintaining the medical record. Reported performance rates may not be fraudulent even if the procedure is not recorded in the medical record. However, because a record of past care is so important to overall quality of care, discrepancies between the encounter form data and medical records are a cause for concern, even if they are not evidence of intent on the part of the facility to "rig" the performance reporting system. If auditors do suspect a pattern of fraudulent recording, they can always contact individual patients to confirm if the test was given.

In the following pages, we list each of the seven[8] currently agreed indicators which will generate a performance incentive. We show screening measures that would suggest the most likely audit candidates. We then suggest the techniques that can be used to test the veracity of the reported performance measure. It is important to remember that one or two deviations----where a medical record shows one thing and the MIDAS report another----may not be proof of systematic error or fraudulent intent. Instead, the corrective action may be to encourage more accurate use of the encounter form and more precise data entry. But when multiple deviations are found between the medical records and encounter form data, further action may be indicated.

---

[6] Which would be relatively large if a more extensive age/sex adjustment is adopted?

[7] Facilities will also create Excel files of patients currently diagnosed with these conditions for input into MIDAS III. Thus, it should be possible to review progress towards testing standards as the year progresses.

[8] Registers of patients with diabetes, hypertension, or coronary heart disease are also used as facility performance measures. Because these are easily verifiable binary variables (Is there a register or not), we do not list them here.

1. *Percentage of children fully immunized at 24 months*

Special registers of immunizations given to infants between January 1, 2008 and December 31, 2009 are being created at each facility as an initial input to the MIDAS system. This will enable the system to begin calculating performance on this variable even though it will not receive encounter forms for services prior to January 1, 2010)

Screening for anomalies

- Top (5%, 10%) of reported outcomes at year end
- Wide variation between first two quarters and year end
- Large change year on year (from low performance to highest reward level)

Verification of reported data

- Pull immunization cards or medical records for children who have reached their second birthday. Review date of immunizations to determine that all scheduled immunizations were completed before 24 months of age. Compare percentage of cases in the sample in conformance with protocol with the performance report.
- Pull from MIDAS records a list of patients showing successful completion of vaccination schedule and print out dates shown for each vaccination. Compare with records of vaccine administration/distribution. (This would be done only if the first item suggests irregularities).

2. *Percentage of pregnant women entering antenatal care in the first trimester*

Screening for anomalies

- Wide variations in value in quarterly reports
- Top (5%, 10%) of reported outcomes at year end
- Wide variation between first two quarters and year end
- Large change year on year (from low performance to highest reward level)

Verification of reported data

- Pull sample of medical records for woman who delivered; compare first date of visit with date of delivery; % at least 5-6 months before normal delivery should match performance report.
- Pull sample of medical records for pregnant women and compare date of first visit with estimated date of conception; compare percentage of cases where first visit was within 3 months of estimated date of conception with performance report

3. *Percentage of children receiving a test for anemia by the age of one year*

Screening for anomalies

- Top (5%, 10%) of reported outcomes at year end
- Large change between second and third quarter reports and year end (for example, 10%, 20%, 30% at quarters 1,2 and 3, and 90% at year end)
- Large change year on year (from low performance to highest reward level)

Verification of reported data

- Pull sample of charts for children between one and two years of age at date of review; determine which ones show an anemia test (hemoglobin level) before fist birthday. Compare to percentage reported in performance score.
- Check medical record of test against laboratory register for day of test

4. *Percentage of diabetic patients receiving annual fundoscopy*

Screening for anomalies

- Top (5%, 10%) of reported outcomes at year end
- Large change between second and third quarter reports and year end (for example, 10%, 20%, 30% at quarters 1,2 and 3, and 90% at year end)
- Large change year on year (from low performance to highest reward level)

Verification of reported data

- Pull sample of medical records of patients over age 45 until you have ten records showing evidence of diabetes; check that all are listed in the register of diabetic patients
- Pull sample of medical records for patients on diabetic register. Check for indication of fundoscopy result within the reporting period; compare percentage to performance report

5. Percentage of patients with coronary heart disease receiving a cholesterol test

Screening for anomalies

- Top (5%, 10%) of reported outcomes at year end
- Large change between second and third quarter reports and year end (for example, 10%, 20%, 30% at quarters 1,2 and 3, and 90% at year end)
- Large change year on year (from low performance to highest reward level)

Verification of reported data

- Pull sample medical records of male patients over age 50 until you have ten records showing evidence of coronary heart disease; check that all are listed in the register
- Pull sample of medical records for patients on coronary heart disease register. Check for indication of cholesterol value[9] within the reporting period; compare percentage to performance report

6. Percentage of patients with coronary heart disease receiving an ECG

Screening for anomalies

- Top (5%, 10%) of reported outcomes at year end
- Large change between second and third quarter reports and year end (for example, 10%, 20%, 30% at quarters 1,2 and 3, and 90% at year end)
- Large change year on year (from low performance to highest reward level)

Verification of reported data

[9] By checking for the test result, and not the indication that a test was ordered, we have a better indication that the test was actually performed. However, if the record shows that the test was ordered but the result not recorded, the reviewer could check the laboratory register for the day of the test. The same can be done with measures 3, 4, 6 and 7.

- Pull sample medical records of male patients over age 50 until you have ten records showing evidence of coronary heart disease; check that all are listed in the register
- Pull sample of medical records for patients on coronary heart disease register. Check for presence of ECG[10] within the reporting period; compare percentage to performance report

7. Percentage of patients with hypertension receiving an ECG

Screening for anomalies

- Top (5%, 10%) of reported outcomes at year end
- Large change between second and third quarter reports and year end (for example, 10%, 20%, 30% at quarters 1,2 and 3, and 90% at year end)
- Large change year on year (from low performance to highest reward level)

Verification of reported data

- Pull sample medical records of patients over age 45 until you have ten records showing evidence of hypertension (blood pressure at most recent visit in excess of defined levels (>160/100); check that all are listed in the register
- Pull sample of medical records for patients on hypertension register. Check for presence of ECG within the reporting period; compare percentage to performance report

Responsibilities

SHA regional auditors should perform selective verifications during visits to primary care facilities for the audit of fee for service payments. Prior to such visits, screening for anomalies (using the MIDAS reports) should be done at the SHA regional office to identify the target facilities, and the measures to be verified. A very small number of facilities that receive performance payments but do not surface on the anomalies screen could be reviewed each year. However, it would be better to include such reviews as part of a joint process that includes the marz quality coordinator and the facility quality improvement committees a s well as the SHA reviewer. This would be similar to the annual review conducted by the Primary Care Trusts in the UK.

Once data is available from the MIDAS system (hopefully by Mar 2010), SHA staff should experiment with a few reviews using the verification measures suggested above. Based on the issues encountered in actually doing these reviews, SHA can prepare an audit manual that would structure the review process conducted by all SHA regional offices.

[10] By checking in the record for the actual ECG strip or report, and not the indication that an ECG was ordered, we have a better indication that the test was actually performed. However, if the record shows that the test was ordered but the result not recorded, the reviewer could check the ECG register. The same procedure can be used with measures 3, 4, 6 and 7.

Critical Actions

1. *Funding commitments for continuation of the quality improvement system*

Ministry/marz health budgets should include funding for continuation of payments to the quality improvement coordinators in the fourth quarter of 2010. Budget planners should count on including the full cost of these coordinators in subsequent years.

2. *Agreement for periodic transfer of MIDAS III performance reports from SHA to marz/Yerevan health departments*

SHA must commit that its regional offices will provide quarterly print outs of the reports on performance of each facility for each performance measure, as well as an indication if the SHA is receiving encounter form data in a timely fashion. The format of the performance reports has been programmed into MIDAS, but PHCR should work with SHA to establish procedures for transmission from the SHA regional office to the marz/Yerevan health department. The reports should there be copied to the responsible quality committee and quality improvement coordinator. Reports comparing the performance of different facilities should be given to each facility manager. During 2010, PHCR should work with the quality coordinators to help them read the reports and identify ways to counsel the facilities on improving performance.

3. *Make allowances for possible delays in the entry of encounter form data.*

Making payments for performance as soon as possible is critical to motivate facilities to improve care and make the effort to complete encounter forms and enter data into the MIDAS III system. To pay in early 2011, SHA must have full MIDAS III data for 2010. If a facility does not complete encounter forms, it will not be eligible, but that is the problem of the facility management. However, it is possible that completion of encounter forms will begin on schedule but data entry will lag through no fault of the facility. This would happen if there is any delay in completing the MIDAS III system, or in setting it up on each facility's computers. Encounter forms would then accumulate at the facility. While it appears that current staffing will be adequate for routine data entry, they will not be able to clear a significant backlog. Either PHCR or the Ministry should be prepared to pay for overtime or temporary personnel to clear data entry backlogs if completion of the MIDAS III system is delayed.

4. *Designate follow up on interim reports of the performance measures as a standard part of the quality improvement system.*

The MIDAS III performance reports are a unique resource for quality improvement. Any revision of the MOH quality improvement manuals should note this. PHCR should help the quality coordinators understand how to use the reports and compare the performance of different facilities. If possible, PHCR staff could also work with the marz quality committees and selected quality coordinators and facilities to identify the most effective ways in which a facility can improve deficient performance on each indicator. For example:

- What patient education techniques are most effective in getting pregnant women to report for antenatal care in the first trimester?
- What follow up system is most effective in getting mothers to return for scheduled vaccinations?
- How does a facility without a laboratory make sure that a referred patient actually gets a cholesterol test? Or can the facility arrange to draw the blood and send it for testing?

This knowledge should be distributed to other quality coordinators and facilities.

5. *Incorporate selective verification of performance measures into the audit procedures of SHA*

We have suggested above certain ways in which SHA can identify facilities that are most likely to have suspect results in various performance indicators. We have also suggested how reviewers can check the general validity of each measure which is questioned. In mid 2010, once regular MIDAS III reports are available, SHA regional audit staff should experiment with these techniques. At that point, it may be appropriate for SHA to develop standardized instructions on the inclusion of performance measure verification in audits of primary care facilities.

6. *Budget for MIDAS III system maintenance and production of additional reports.*

Almost inevitably, SHA auditors and MOH quality coordinators will identify additional reports which would be useful in primary care monitoring, and can be derived from the MIDAS III data base. In addition, MIDAS III maintenance problems may be encountered after the end of the PHCR contract. At the moment, individual health facilities are left to contract with the software supplier for system maintenance for the Open Enrollment system. Since the important reporting elements of MIDAS III will be operated by the SHA regional offices, SHA should make a budget allowance, preferably beginning in 2010, to allow it to contract for overall system maintenance and for the programming of additional reports.

APPENDIX 1. LIST OF PERFORMANCE INDICATORS /to be linked with financing/

Indicator 1: **Full immunization coverage of children at age 24 months, according to the National immunization calendar.**

Number of children at the age of 24 month during the reporting period____

Injected vaccine	**Number of vaccinated children at age of 24 months**	**Immunization coverage (%) ***
1	2	3
Hepatitis B- 3		
APDT-4 (against adsorbed pertusis, diphtheria, tetanus)		
OPV-5 (oral poliomyelitis vaccination)		
MMR-1 (against measles, mumps, rubella)		
All the vaccinations included according to the national calendar		

* Note: for calculation of immunization coverage by lines (vaccines) it is necessary to divide the value of the certain line of the column 2 by the total number of children at the age of 24 months and multiply it by 100.

Indicator 2: **Screening for Anemia in children at age 1 year.** (general blood examination (including hemoglobin) of 1-year-old children)

Number of children who turned 1 year old during the reporting period	**Number of 1-year-old children who had undergone general blood examination (including Hb)**	**Percentage (%) *of the examination**
1	2	3

* Note: For calculating the value of **column 3** it is required to divide the value of the column 2 by the value of the column 1 and multiply the result by 100

Indicator 3: **Regular fundoscopy exam in patients with diabetes mellitus Type II.**

a) Number of patients with diabetes mellitus types II during the reporting period ----------

Name of the indicator	**Actual number of examined patients**	**The percentage of patients with diabetes mellitus type II from the total number of patients (%)** [1]
1	2	3
Patients with diabetes mellitus type II who had fundoscopy exam during the reporting period		

[1] – for calculating the value of column 3 it is necessary to divide the value of column 2 by the total number of corresponding patients registered during the reporting period and multiply the result by 100

Indicator 4: **Regular ECG monitoring in patients with diagnosed Hypertension.**

Number of patients with hypertension during the reporting period …….

Name of the indicator	Actual number of examined patients	The percentage from the total number of hyper-tension patients (%) *
1	2	3
Hypertension patients who had at least one ECG during the reporting period		

Indicator 5: **Regular ECG monitoring in patients with diagnosed Coronary Heart Disease (CHD).**

Number of patients with coronary heart disease (CHD) during the reporting period …….

Name of the indicator	Actual number of examined patients	The percentage from the total number CHD patients (%) *
1	2	3
CHD patients who had at least one ECG during the reporting period		

Indicator 6: **Blood cholesterol control in patients with Coronary Heart Disease (CHD).**

Number of patients with ischemic heart disease (IHD) during the reporting period …….

Name of the indicator	Actual num-ber of examined patients	The percentage from the total number of IHD patients (%)[1]
1	2	3
Number of IHD patients [2] who had at least one total cholesterol test during the reporting period		

Note:

[1]- for calculating the value of **column 3** it is necessary to divide the volume of column 2 by the total number of corresponding patients registered during the reporting period and multiply the result by 100.

[2]- This indicator is not considered for financial reimbursement purposes, it is considered as a monitoring indicator.

Indicator 7: **Early detection and registration of pregnant women for antenatal care.**
(early coverage of pregnant women by FPs)

Total number of pregnant women registered by family physician during the reporting period	**Number of pregnant women with up to 12-week pregnancy registered by family physician during the reporting period**	**Percentage of early coverage of pregnant women (%) ***
1	2	3

* Note: For calculating the value of **column 3** it is required to divide the value of the column 2 by the value of the column 1 and multiply the result by 100.

Indicators 8, 9 & 10: **PHC facility has to produce registers of patients with diagnosed Type-2 Diabetes Mellitus, Hypertension and Coronary Heart Disease (CHD).**

The indicator	**"Value" of Indicator** [1]
Indicator 8: **PHC facility has to produce a register of patients with diagnosed Type-2 Diabetes Mellitus**	'Yes' *or* 'No'
Indicator 9: **PHC facility has to produce a register of patients with diagnosed Hypertension**	'Yes' *or* 'No'
Indicator 10: **PHC facility has to produce a register of patients with diagnosed Coronary Heart Disease (CHD)**	'Yes' *or* 'No'

Note:
[1]- The indicator is evaluated as "Yes" in case if ***each PHC physician*** at the facility has an ***available*** and ***regularly updated register*** of patients with the given disease (Type-2 DM, Hypertension and CHD) managed by that physician.

APPENDIX 2. LIST OF ADDITIONAL MONITORING INDICATORS

1. Prevention of eye diseases

    1.1. Proportion of school age children who have undergone vision examination during the reporting period.

    1.2. Proportion of population at the age of 40 and higher who have undergone the measuring of intraocular pressure during the reporting period.

2. Pubescence assessment indicator

    2.1. Proportion of children over 15 who have undergone pubescence assessment by Tanner scale during the reporting period.

    2.2. Proportion of girls over 15 who have undergone an overall ultrasound exam of pelvis minor organs during the reporting period.

3. Monitoring indicators of adult patients with diagnosed type II diabetes

    3.1. Proportion of adult patients with diagnosed type II diabetes who have undergone at least one glucometry examination during each month of the reporting period.

    3.2. Proportion of patients with diagnosed type II diabetes who have undergone the check-up of peripheral pulse during the reporting period.

    3.3. Proportion of adult patients with diagnosed type II diabetes who have undergone glycolized hemoglobin examination during the reporting period and the last examination result of which was 7% or lower.

    3.4. Proportion of adult patients with diagnosed type II diabetes who have undergone at least one general cholesterol examination during the reporting period.

    3.5. Proportion of adult patients suffering from diabetes whose blood pressure results equaled to or was under 140/90 mm mercury column (the results of the last examination realized during the reporting period are considered).

4. Secondary prevention of Ischemic Heard Disease

    4.1. Proportion of adult patients with ischemic heart disease whose last blood pressure measurement result during the reporting period was 140/90 mm m.c. or lower.

    4.2. Proportion of adult patients with ischemic heart disease who have undergone general cholesterol examination during the reporting period and whose last examination result was 5 mmole/l or lower.

    4.3. Proportion of adult patients with ischemic heart disease who have taken aspirin or alternative antiaggregant/ anticoagulant during the reporting period /in case of the absence of contraindications or side effects/.

    4.4. Proportion of adult patients ischemic heart disease who have taken β-adrenoceptor blocker during the reporting period /in case of the absence of contraindications or side effects/.

5. Secondary prevention of hypertension

    5.1. Proportion of adult patients with hypertension whose last blood pressure measurement result during the reporting period was 140/90 mm m.c. or lower.

    5.2. Proportion of adult patients with hypertension who have undergone at least one general cholesterol examination during the reporting period.

5.3. Proportion of adult patients with hypertension who have undergone eye grounds examination (phandoscopy) during the reporting period.

6. Adult patients with stroke and elapsing disturbances of cerebral blood flow

6.1. Proportion of patients with stroke and elapsing disturbances of cerebral blood flow whose last blood pressure measurement result during the reporting period was 140/90 mm m.c. or lower.

6.2. Proportion of patients with stroke and elapsing disturbances of cerebral blood flow who have undergone at least one general cholesterol examination during the reporting period.

6.3. Proportion of those patients with stroke and elapsing disturbances of cerebral blood flow who have undergone general cholesterol examination during the reporting period and whose last examination result was 5 mmole/l or lower.

APPENDIX 3. PRIMARY HEALTH CARE SERVICE PROVISION ENCOUNTER FORM N002

Healthcare facility _____ (name) SHA code /__/__/__/__/__/__/__/__/__/	Approved by the Order of the Republic of Armenia Minister of Health No. …….. – N dated ……

1. Sequence number /__/__/__/__/__/__/__/

2. RESIDENT _____ **3. AMBULATORY CARD N**

(Last Name) (First Name) (Patronymic)

4. PATIENT'S PLACE OF RESIDENCE

(town/village) (street) (building/house) (apartment)

5. PATIENT'S DATE OF BIRTH / / . (day) (month) (year) **6. SEX** ☐ Male ☐ female

7. ID NUMBER _____ (passport), **or** _____ (birth certificate), **or** _____ (other - mention)

8. SOCIAL SECURITY CARD NUMBER_____ **9. SOCIAL STATUS** _____ **N** _____-_____

(document number) (according to the list)

10. Paym ent order	
☐ State Order	☐ paid

11. Date	
Start ____/_____/ 20..... (day) (month)	**End** ____/_____/ 20.... (day) (month)

12. Purpose of applying *(state one of the options)*	
☐ disease	
☐ dispencer supervision	
☐ preventive	Z …… *(code ICD 10 Z)*
☐ administrative	Z …… *(code ICD 10 Z)*
☐ reproductive	Z …… *(code ICD 10 Z)*
☐ other	Z …… *(code ICD 10 Z)*

13. Number of visits	
Healthcare facility	……
Home	……
Primary visit was realized	☐

14.Outcome
Ambulatory treatment
☐ Without changes
☐ Condition stabilization
☐ Recovery
☐ Improvement
☐ Passing to chronic condition
☐ Worsening
☐ Treatment interruption
☐ Death
Referral
☐ To the hospital – **urgently**
☐ To the hospital – **planned**
☐ Rehabilitative treatment
☐ SME
Referral `N **……**

15. Referral to the specialist (In the given healthcare facility or other healthcare facility)				
	Internal	No. of visits	Other	No. of visits
Cardiologist	☐	___	☐	___
Internist	☐	___	☐	___
TB/Infectious	☐	___	☐	___
Surgeon	☐	___	☐	___
Oncologist	☐	___	☐	___
Obst./gynecologist	☐	___	☐	___
Dentist	☐	___	☐	___
Oculist	☐	___	☐	___
Urologist	☐	___	☐	___
Kidney specialist	☐	___	☐	___
ENT	☐	___	☐	___
Neurologist	☐	___	☐	___
Psychiatrist	☐	___	☐	___
Dermat./venerol.	☐	___	☐	___
Other *(state)* ……	☐	___	☐	___
……	☐	___	☐	___

16. Provided services (consultations, interventions, laboratory-instrumental examinations, physiotherapy) *(state the code according to the annex)*						17. Vaccination
Service Code	Quantity		Service Code	Quantity		☐ **Realized vaccination** *(state the code according to the annex)*
	Internal	External		Internal	External	1. _____
						2. _____
						3. _____
						4. _____
						Vaccination was not realized
						☐ Due to medical contra-indications
						☐ Due to refusal

18. Prescribed drugs						
Drug name	Measurment unit	Quantity	Provided by			
			State Order	Prescription N	Humanitarian	Patient's expenses
			☐		☐	☐
			☐		☐	☐
			☐		☐	☐
			☐		☐	☐
			☐		☐	☐
			☐		☐	☐
			☐		☐	☐
			☐		☐	☐
			☐		☐	☐
			☐		☐	☐
			☐		☐	☐

19. Diagnosis

Disease/ condition	Code according to ICD 10 revision	Name according to ICD 10 revision	First time diagnosed	Dispensary care	
				ncluded	Excluded
1. Main			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
2. Associated			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐

Physician _____

_____

First name, last name signature

Nurse _____

_____

First name, last name signature

Data entry _____

_____

First name, last name signature

Data entry date…… /...../ 200.. .

APPENDIX 4. TRAINING SCHEDULE FOR IMPLEMENTATION OF ENCOUNTER SYSTEM

N	Marz	# of Quality Coordinators	# of PHC facilities	# of groups	# of PHC staff/trainees	Duration	
						Trainings	Supportive visits to PHC facilities
1	Aragatsotn	3	22	2	30	21/11/2009	January-February, 2010
2	Shirak	4	23	3	46	17/10/2009	
3	Armavir	4	55	3	66	21/11/2009	
4	Kotayq	4	38	3	56	17/10/2009	
5	Lori	5	33	3	63	12/12/2009	
6	Tavush	3	26	2	33	17/10/2009	
7	Vayots Dzor	2	8	1	13	21/11/2009	
8	Gegharqunik	4	35	3	49	17/10/2009	
9	Ararat	6	54	3	72	21/11/2009	
10	Syunik	5	17	3	31	21/11/2009	
11	Yerevan	10	36	6	149	12/12/2009	
TOTAL		**50**	**347**	**32**	**608**		

FIGURE 1

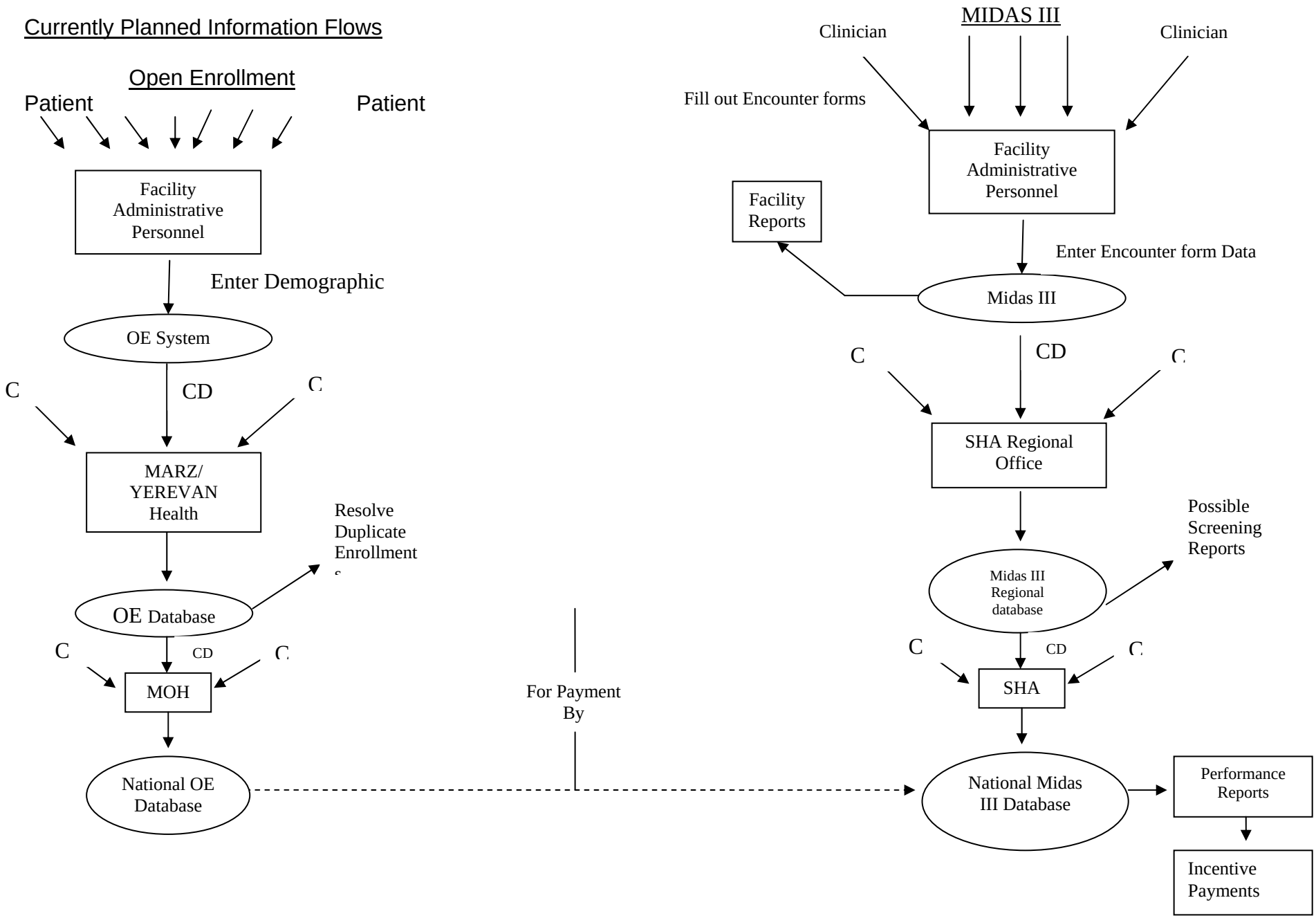
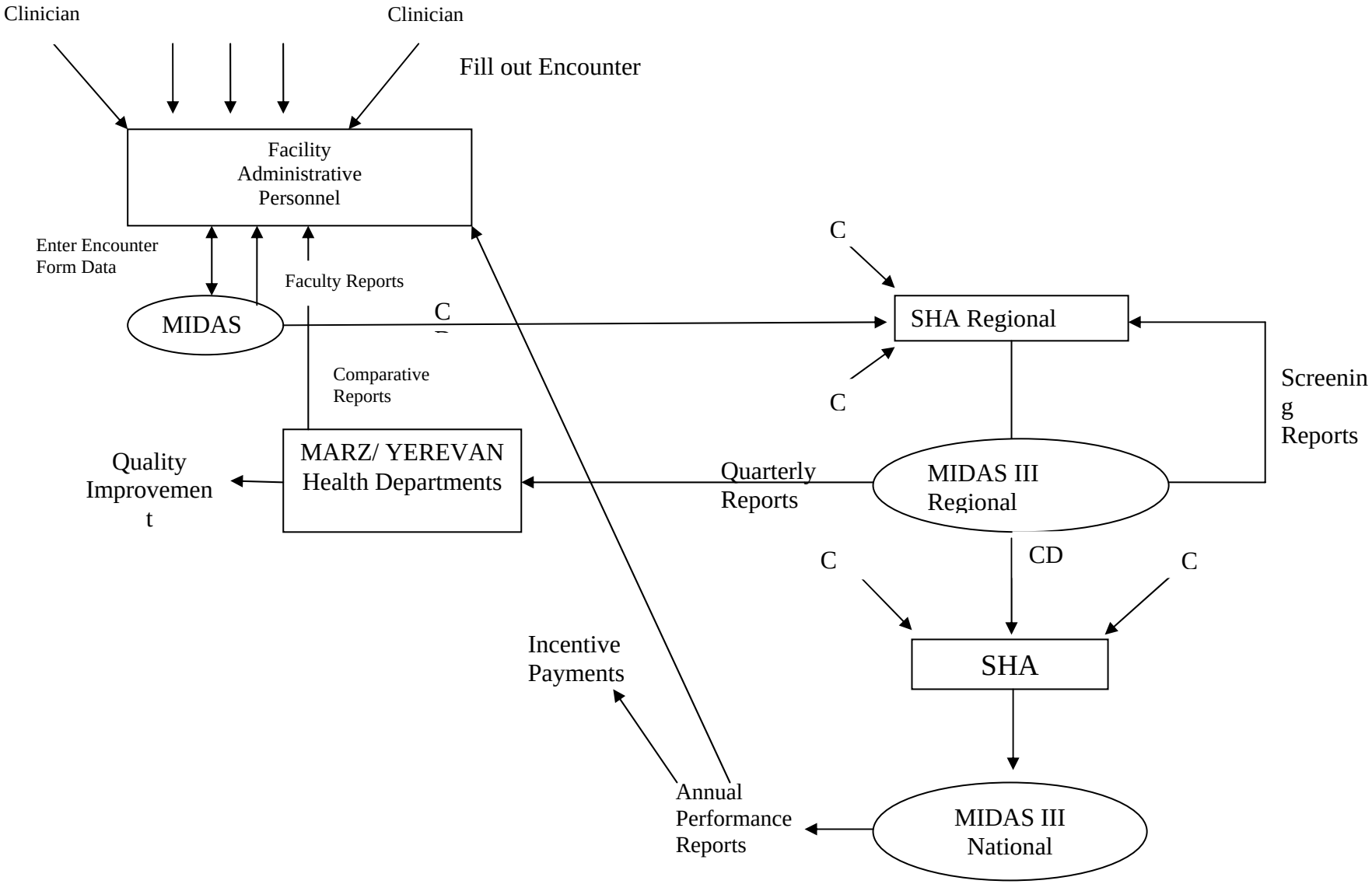

Currently Planned Information Flows
Open Enrollment
Patient
Patient
Facility Administrative Personnel
Enter Demographic
OE System
C
CD
C
MARZ/ YEREVAN Health
Resolve Duplicate Enrollment
OE Database
C
CD
C
MOH
National OE Database
For Payment By
MIDAS III
Clinician
Clinician
Fill out Encounter forms
Facility Administrative Personnel
Facility Reports
Enter Encounter form Data
Midas III
C
CD
C
SHA Regional Office
Possible Screening Reports
Midas III Regional database
C
CD
C
SHA
National Midas III Database
Performance Reports
Incentive Payments

FIGURE 2

Recommended Information Flows- MIDAS III
(OE Information Flows Unchanged)