

Clinical Performance Indicators for Macedonian Hospitals

Given the proposed data items to be collected for inpatient episodes of care, it is suggested that the following clinical performance indicators should be generated from the dataset. For many of the indicators it will be possible to utilise benchmarking data to develop short-term and long-term targets for healthcare institutions and services. Such targets should be realistic, but challenging.

Initial emphasis should be on a small number of indicators for which timely reports and feedback will be possible, with further indicators being progressed as the IT infrastructure and capability is improved.

It is suggested that the initial programme will be to produce six-monthly and annual reports, but that this will be developed to monthly reporting as IT infrastructure and capability is improved.

1. The absolute number of inpatients, including those managed on a day care basis, admitted to and discharged from the hospital.

The hospital is identified in the dataset, and this indicator is easily generated because it is the total number of patients for whom a dataset is obtained.

It is not, of itself, important, but trend analysis over a period of months and years will be of value in showing increasing throughput (and efficiency) for an institution. If improvements are not being seen, then deeper analysis is required and further questions will need to be asked.

2. The absolute number of inpatients passing through individual services.

This indicator can be produced, as service under which the patient is admitted is one of the data items. Similar comments apply here as to the whole institution, except for those services where there should be a minimum throughput seen. An example is cardiac surgery, where it is recognised that surgeons need to perform enough operations to keep their skills, and a minimum throughput is needed to justify the expense of setting up and continuing to finance a service.

In this instance it may well be justifiable to compare similar services in different hospitals, while recognising that case-mix differences could explain some of the differences identified.

In the future it will be possible to produce reports down to the level of individual doctors, as they are identified in one of the proposed data items. However, it would not be recommended that such information

be produced until healthcare professionals in Macedonia are accepting of the fact that such information is being used for quality improvement purposes, and is not seen as a 'scapegoating' or 'blaming' exercise.

3. Length of stay, with reports to include average, maximum and minimum. The reports should be produced at both whole institution level, for individual services, and for specific conditions or diagnoses.

These indicators can be produced from the admission and discharge data items, together with the speciality and ICD10 entries. As indicators they can be used as an initial assessment of how efficient and effective an institution or speciality is at delivering care. This is especially true where benchmarking data is available for comparison purposes. Where discrepancies are identified, this is an indication for further in-depth analysis to inform any recommendations or proposals.

For example, for a diagnosis where there is a marked difference in average and minimum stays for inpatients, such as 4 days and 8 days, more detailed analysis may reveal that the minimum length of stay identified could become the 'norm' if there are some changes in the management of all patients with this particular diagnosis in this particular institution.

Similarly, for maximum lengths of stay, a particularly long inpatient stay may be an indication that there is some aspect of the care required that is not being provided. Further investigation could well identify any problems in this regard.

Once again, it will be possible to produce information down to the level of individual doctor, but this aspect should not be used for generating routine reports, but to further inform the analysis when potential problems are identified by the institution, speciality or diagnosis indicators.

4. Pre-operative and post-operative lengths of stay.

These are important indicators for surgical patients, and can be calculated from the various date data items, admission, discharge and date of operation. They should be produced by speciality and by particular procedures for an institution. It would also be useful to have separate indicators for elective and emergency admissions.

Any patients managed as a day case (that is where date of admission and discharge are the same) should be excluded from the calculations for these indicators.

The ultimate target for pre-operative LoS for elective patients should be of the order of one day. If efficient and effective assessment and investigations processes are in place there will be no need for a patient

to be admitted several days pre-operatively, as they will have been fully 'worked up' before being admitted.

For post-operative length of stay there is benchmarking information available for particular procedures, such as prosthetic replacement of hip, CABG, open cholecystectomy, and inguinal hernia repair. It would also be possible to identify services within Macedonian institutions that could be used as examples of good practice.

Where lengths of stay are identified which are longer than is thought to be reasonable, there needs to be ongoing discussion with the institutions and services concerned as to how improvement can be brought about.

5. Mortality

There will always be a number of patients who die, no matter how good the management of their condition. The intention is to be able to identify where deaths are unexpected or the numbers are higher than expected. This will not be to 'blame' services or individuals, but to highlight areas where improvement is needed and to work with institutions and services to bring about these improvements.

In some instances a mortality rate will be relevant, and in others absolute numbers of deaths. An example of the former would be deaths following CABG or surgery for fractured hip. In both of these there is international mortality data available, and this would need to be interpreted given circumstances in Macedonia, so that what is considered an appropriate rate can be agreed.

Any service having a higher rate than that documented would need to take an in-depth look at their deaths and the management of the patients, to try and identify areas for improvement so that the death rate reduces.

It may also be possible that areas of good practice can be shared between those services having good mortality figures and those services where they are less good.

Examples of those conditions where absolute numbers of deaths would be of importance are a severe asthmatic attack, and patients admitted with diabetic ketoacidosis. In both of these diseases any death is an indicator of management which is less than ideal. With good management of asthma and diabetes there should be very few patients admitted with these complications, and no patient should die.

6. Day Surgery Rates

Day surgery is an important way in which throughput of surgical patients can be improved. The percentage of the total number of

patients having surgery, which are managed as day cases, is an indicator of how successfully this is being managed. What is an appropriate 'target percentage' for Macedonia needs to be agreed, and discussions will need to be held with the healthcare institutions and services as to how progress towards any target can be achieved.

For some procedures there will be an expectation that a high percentage of cases will be done on a day care basis, such as cataract surgery and primary inguinal hernia repair. For both of these procedures there are units where 100% of cases are so managed.

Discussion on what is appropriate in Macedonia will be needed before agreement can be reached on what percentage for particular procedures is realistic.

7. Re-admission within 30 days of discharge

Numbers will be expected to be small, and therefore absolute numbers by institution, speciality, and diagnosis could be calculated. In some instances the re-admission diagnosis will be the same as for the original admission, but, even with a different diagnosis, the re-admission could be as a result of the original treatment. For example a readmission with bronchopneumonia could be due to being discharged with an unrecognised or poorly treated chest infection.

It is emergency, unplanned admissions that are important. Planned elective admissions for a course of treatment given as an inpatient are not of concern.

Re-admissions are not, of themselves, an indication of poor management, but an indication that the re-admission should be reviewed to see whether there is anything that should be learned that would improve patient care and avoid such a re-admission in the future. With small numbers it will be possible to investigate and report on each of them, the report to include any recommendations for improvement, whether it be a change in working practice, or in the management of a particular condition.

8. Referrals to specialist (tertiary) hospitals

These institutions will need to be identified specifically on the data collection form if all tertiary hospitals are not part of the initial indicator programme.

Such a referral is not necessarily 'wrong' or a sign of poor initial management, but a large number of referrals would indicate that further investigation is required, to answer such questions as –
Was the initial referral appropriate?
Would an immediate initial referral to tertiary services have been better?

Was the referral made in a timely manner? Was it made as soon as specialist management was recognised as being needed?
Was the patient accepted by, and transferred to, the specialist service as soon as the referral was made? Or was there a significant delay before the transfer took place?

As with some of the other indicators, trend analysis over time will be an important aspect. No demonstrable improvement when inappropriate or unnecessary referrals have been identified would be unacceptable.

9. Referrals to other healthcare institutions.

To be able to track such referrals will require them to be specifically identified, until the IT infrastructure allows every healthcare institution to be part of the indicator programme. When this is the case, the patient unique identifier will allow tracking of patients through different institutions.

There should be little need for hospitals to refer to other than tertiary/specialist services at another healthcare institution. Referrals to the same or different services at another secondary institution should raise concerns. All such instances therefore need investigating to check that the referral was appropriate and necessary.

10. Patient satisfaction

This indicator will be derived from the patient satisfaction questionnaire, not the indicator data-set.

How the questionnaire is to be used and which patients are to receive it needs to be agreed. Options include all patients being given the questionnaire on discharge, while still an inpatient, or a selection of patients being sent the questionnaire following discharge.

When deciding how to proceed the problems with obtaining an adequate response rate, and avoiding bias in the results obtained have to be taken into account.

A draft of the form to be used for the collection of the data is given below, and following this will be a description of the data-items which will be used to generate results for each of the indicators.

DATA ITEMS FOR CLINICAL INDICATORS FOR INPATIENTS

1. Hospital (institution and municipality) _____
2. Unique ID number of patient _____
3. Service/Speciality of admission _____
4. Admitting Doctor _____
5. Date of birth of patient day _____ month _____ year _____
6. Sex M / F (please circle as appropriate)
7. Occupation of patient _____
8. Date of admission day _____ month _____ year _____
9. Date of discharge day _____ month _____ year _____
10. Type of admission Routine / Emergency (circle as appropriate)
11. Basic disease, nature of the injury/condition for which he/she is receiving treated/rehabilitation (according to ICD – enter as many ICD codes as necessary)

12. Operation performed day _____ month _____ year _____
13. Operating Surgeon _____
14. Anaesthetist for operation _____
15. Operation performed (ICD or other code) _____
16. Re-Operation performed YES / NO (circle as appropriate)
17. Date of Re-Operation day _____ month _____ year _____
18. Did the patient die during this admission YES / NO (circle as appropriate)
19. Autopsy requested YES / NO (circle as appropriate)
20. Patient referred to another hospital YES / NO (circle as appropriate)
21. Name of hospital patient referred to _____
22. Doctor patient referred to _____
23. Speciality patient referred to _____

The form above can be completed by either the hospital or a member of RIPH staff, but training in the correct identification of the ICD codes (and any operative procedure codes) to be used is essential.

It would also be possible to have the form produced in a machine readable format, so that scanning of completed forms would make data entry a quicker process. This would depend on the appropriate scanning hardware and software being available.

It is also possible to have ICD (and other) codes as linked data, so that inputting of the codes is a much easier process when data is being entered into a database.

DATA ITEMS TO BE USED FOR THE CALCULATION OF INDICATOR REPORTS

The absolute number of inpatients, including those managed on a day care basis, admitted to and discharged from the hospital.

This is simply a count of the number of patients discharged over a defined period, whether it be a year, six months, or one month for a particular hospital. Therefore a count of either the unique identifier or date of discharge will generate this number for each of the hospitals.

Data items used - 1 and 2 or 9, once the appropriate records for the period under review have been identified using data item 9.

The absolute number of inpatients passing through individual services.

This is also a simple count, but of the numbers through the different specialities/services within a hospital over a defined period of time.

Data items used – 1, 3, and 2 or 9, once the appropriate records for the period under review have been identified using data item 9.

Length of stay, with reports to include average, maximum and minimum. The reports should be produced at both whole institution level, for individual services, and for specific conditions or diagnoses.

The length of stay for each patient is calculated from the date of admission and discharge data items (8 and 9).

Using this calculated data average, maximum and minimum figures can be calculated for institutions, diagnosis and services (data items 1,3, and 11), again for a defined period of time using data item 9.

Separate figures for routine and emergency patients can be obtained using data item 10.

Pre-operative and post-operative lengths of stay.

These lengths of stay are calculated from the date of admission, discharge and operation data items (8,9, and 12). Again average, maximum and minimum figures can be calculated for hospitals, services within a hospital,

specific diagnoses, and for procedures performed within a hospital or service. The data items used in addition to those already given are 1, 3, 11 and 15. Any patient having surgery on a day case basis (day of admission is the same as day of discharge) should be excluded from these calculations.

Separate figures for routine and emergency patients can be obtained using data item 10.

The procedure coding to be used will need to be specified – is ICD coding only to be used, or is a specific operative procedure coding to be used, such as the UK OPCS4.

Mortality.

Absolute numbers of deaths for a hospital or service (data items 1 and 3) can be calculated by counting the number of instances where data item 18 is a 'yes'.

Similar calculations can be performed for particular diagnoses or operative procedures (data items 11 and 15).

For those diagnoses or procedures where a rate (as a percentage) is appropriate, this is easily done by using the calculations done here, together with similar ones to those already done for the absolute throughput indicators, using the diagnosis and procedure data items as the basis for counting.

Separate figures for routine and emergency patients can be obtained using data item 10.

Day Surgery Rates.

A day surgery patient is a routine admission where day of admission and discharge are the same, and an operative procedure has been performed (data items 8,9, and 12 or 15).

The percentage of all surgical patients managed as a day case can then be calculated using data item 12 or 15 as the denominator.

Percentages for specific diagnoses procedures can be calculated using data items 11 and 15.

It is appropriate to develop day surgery targets for overall surgical activity and for specific operative procedures.

Re-admission within 30 days of discharge.

For any patient a re-admission within 30 days of being discharged can be identified using the unique identifier (data item 2) and date of re-admission being 30 days or less following a discharge (data items 8 and 9). The re-admission should be as an emergency (data item 10).

Referrals to specialist (tertiary) hospitals.

Data item 20 allows counting of referrals to another healthcare institution, whether secondary or tertiary. Categorising into a tertiary service requires use of data item 21 or 23 and a list of tertiary centres or services that they can be compared with.

Referrals to other healthcare institutions.

The calculations for this indicator are the same as above, except the comparison will be not matching the list of tertiary centres.

For each of the above indicators the results can be for a whole hospital, a service, or for particular diagnoses.

THE FUTURE

The data items collected on the form above will allow the calculation of more detailed indicators, such as by doctor or surgeon, or for particular age groups. Investigation of occupational diseases could be developed.

As IT capability improves there will be the opportunity to develop further indicators, and to enhance the data collection, analysis and monitoring that is undertaken.