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HEALTHSTAT: MEASURING THE PERFORMANCE OF THE IRISH PUBLIC HEALTH SERVICE

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***Abstract*:** HealthStat is a tool for measuring the performance of the Irish public health service. It consists of a data collection process, the production of performance statistics in graphical dashboard format and a monthly accountability forum that invites a rotating selection of service delivery units. HealthStat ran in pilot phase throughout 2008. Performance dashboards for 29 general and regional hospitals were first published in the public domain on 23rd March 2009. HealthStat will extend to all remaining hospitals and to community health and social care services during 2009. This paper describes, from a health information perspective, the background to HealthStat, the challenges faced and the way ahead.

Keywords: HealthStat, public health, data collection, performance indicators
JEL Classifications: C81, I10, I18

1. INTRODUCTION

HealthStat is a tool for measuring the performance of the Irish public health service. It consists of a data collection process, the production of performance statistics in graphical dashboard format and a monthly accountability forum that invites a rotating selection of service delivery units. HealthStat ran in pilot phase throughout 2008. Performance dashboards for 29 general and regional hospitals were first published in the public domain on 23rd March 2009. HealthStat will extend to all remaining hospitals and to community health and social care services during 2009. This paper describes, from a health information perspective, the background to HealthStat, the challenges faced and the way ahead.

2. BACKGROUND

At the beginning of 2007 the newly established Decision Support Unit of the HSE was given the task to examine and document all sources, content and flow of performance information in the HSE. With support from the CEO and his performance advisor, the brief was to consider how such information could be integrated and used in a way that would promote continuous improvement in the performance of health services delivery.

The approach taken by Decision Support was to identify internal and external information stakeholders and conduct interviews. This investigative phase interacted with existing and potential suppliers, collectors and reporters of performance information, report recipients and regulators.

The HSE is a large and complex organisation and so it was a major challenge to understand all the different pieces of the jigsaw. A bewildering array of acronyms lay on top of numerous units, departments, projects, bodies, directorates, reports, processes and systems **(Figure 1)**. Standard datasets were obtained from many parties and varied in granularity from individual patient level data to nationally aggregated statistics.

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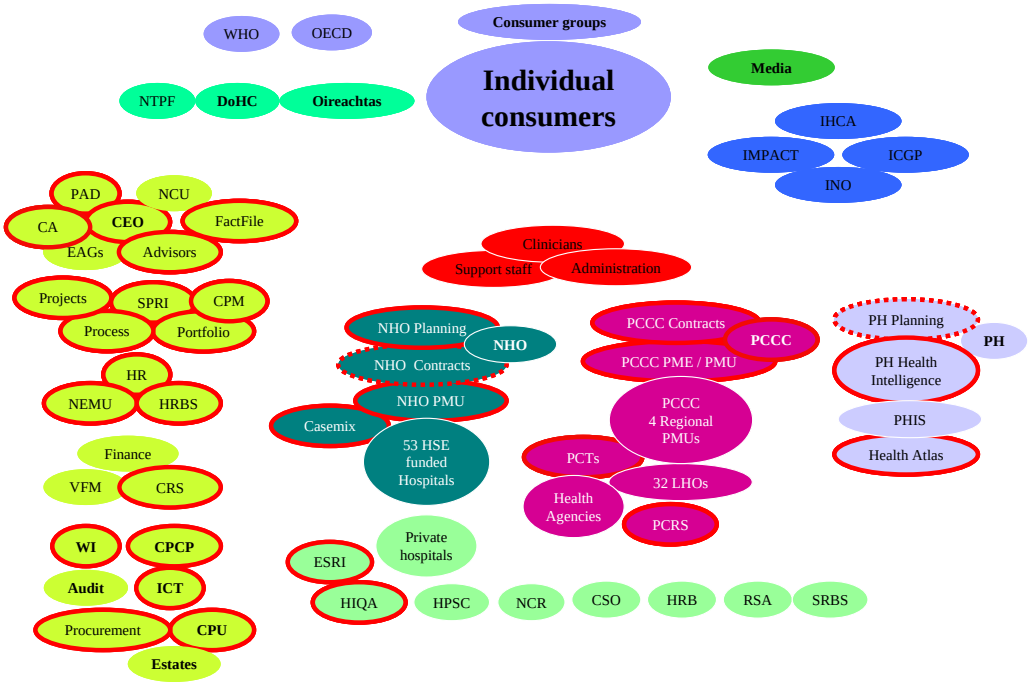


Fig 1. Stakeholders in HSE Performance Information (see Appendix 1 for key)

Use of this management information varied around the country. Local and regional management had bespoke reporting requirements. Centrally, the HSE exerted control through reporting of financial and human resources. Corporate planning, contracts and utilisation were key consumers of information at various levels. There were two main central reports for performance - the monthly report against the HSE's annual national service plan and the quarterly report against the three year corporate plan. In almost all cases the information was reported upwards from the service units to HSE corporate levels and onwards to the DoHC but an effective operational feedback loop was absent or of a low profile.

The CEO expressed his desire to put a 'finger on the pulse of the performance of the HSE' but was unable to do so. From an executive perspective the reporting of performance information was driven by information silos and produced a wide variety of disconnected extracts of information **(Figure 2)**. By the way, it is acknowledged that Fig 1 and 2 look confusing, that was the performance environment of the HSE. An integrated view was only achieved on an ad hoc basis when surveys or individual reports were commissioned. To address this perceived lack of integrated operational performance measurement, the CEO tasked Decision Support in September 2007 with the rapid development and implementation of an integrated performance solution that was to become known as HealthStat.

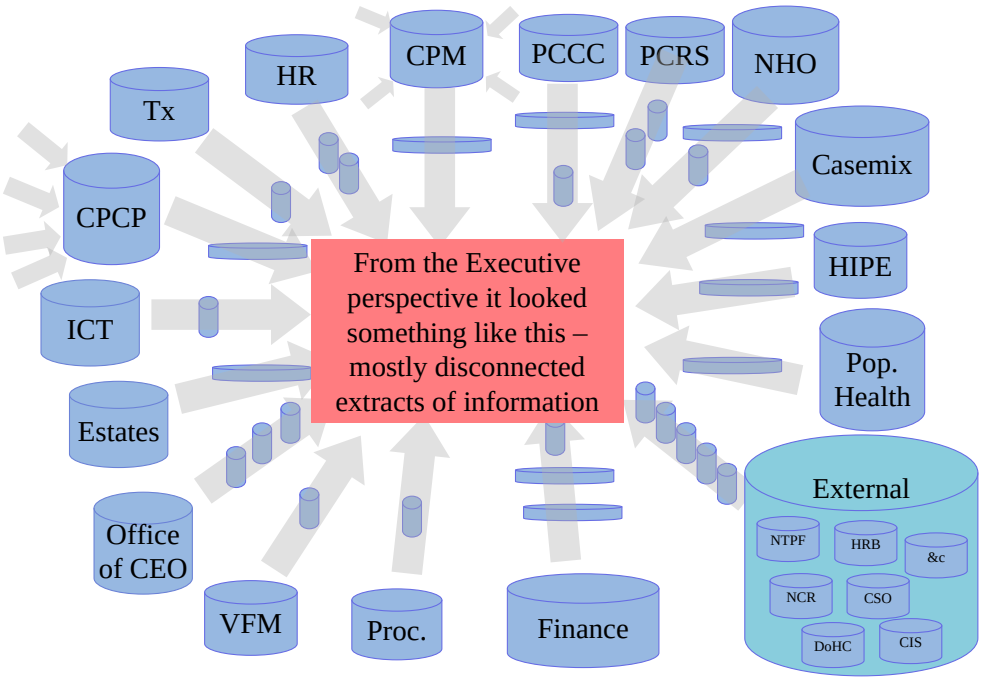


Figure 2. HSE Performance Information reporting in 2007 (see Appendix 1 for key)

HealthStat was given a framework that included 12 areas of monthly metrics that were aligned with access, integration and resources **(Figure 3)**.

Access addressed waiting times for elective procedures, emergency department admission, diagnostic tests, therapies and out-patient clinics.

In the Integration section, a summary of patient level data from the Hospital Inpatient Enquiry system (HIPE) was to provide insights on the nature of healthcare episodes i.e. average length of stay, day case rate, day of procedure admission rate and delayed discharges.

Resources included a few basic measures, such as financials, service plan performance and absenteeism. It also focused on activity of resources: allied health professionals, radiology and consultant-led outpatient clinics.

The premise was that this intuitive focus would measure and encourage operational excellence in a way conducive to the HSE's vision of *right service, in the right place and at the right time*. This means timely and equitable access for public patients to services; integration within services such that patients are treated appropriately and experience a simplified patient journey, in the right setting and to optimum benefit; and, efficient use of resources such that the right kind of activity is achieved within financial and HR restraints. This focus was to be applied across the 36 hospitals that were covered by the Casemix system at that time, using Casemix participation as an indication of the availability of information within a hospital.

Examination of performance measurement approaches in other countries was of limited assistance in the development of a system for Ireland as other health services had different perspectives due to their varying states of maturity and scope. So the 12 areas nominated by the CEO and his advisor were taken as the starting point. Faith in these 12 areas was confirmed during the first annual review of the HealthStat metrics in mid 2008 when a selected group of hospitals verified that HealthStat had hit on the right fundamental measures.

ACCESS	INTEGRATION / APPROPRIATENESS	RESOURCES
11. Hospital Wait Time for Electives and Emergency Department *(monthly)* -NTPF elective wait time by time waiting -Collated by PMU from NTPF -ED Traffic Lights and associated detail on wait time -Collated by PMU from WI **12. Routine GP to Hospital Referral Wait Time *(monthly)*** -GP request to hospital time to next appointment for: o X-Ray o Ultrasound o Physio o OPD By Consultant ***-Collected by hospital***	**6. Average Length of Stay (ALOS) *(Monthly)*** -Gross and adjusted ALOS for total hospital and by select procedures (varies by hospital type), e.g.: o MI o Tonsils o Diabetes o Asthma o COPD o Appendectomy o Cataract o Hip -Calculated by Casemix from monthly hospital HIPE returns **7. Hospital Day Case Rates *(Monthly)*** -Overall hospital day case rate by public / private for overall and by select procedures (varies by hospital type), e.g: o Varicose veins o Cataract o Inguinal hernia o Tonsillectomy -Calculated by Casemix from monthly hospital HIPE returns **8. Delayed Discharges *(Monthly)*** -Hospital Delayed Discharges by Type -Collected by PMU **9. Day Of Surgery Admissions *(Monthly)*** -Overall rate of patients being admitted on their day of surgery -Calculated by Casemix from monthly hospital HIPE returns **10. Appropriate Use of Beds *(Baseline then repeat)*** -% of admissions and inpatients on day of care by hospital -Baseline from Acute Hospital Bed Review and updated on repeat	**1. Service Plan Aggregate Statistics *(Monthly)*** -Comparison of YTD summary hospital actual spend versus plan -Collected by CPCP from Service Plan -Comparison of key hospital level performance statistics, such as cost per bed, cost per patient, patients per bed **-2. Detailed Hospital Financials *(Monthly)*** -Breakdown of YTD then monthly hospital operating costs by Non Payroll and Payroll (by Overtime, Agency and Locum) -Collected by Finance **3. Hospital Staffing (Quarterly) and Absentees *(Monthly)*** -Breakdown of quarterly WTEs for: o Radiographers o Ulstrasonographers o Physios o OTs o Social Workers -Collected from Staff Census -Breakdown of monthly WTEs for Consultants per specialty & junior doctors per specialty -Breakdown of YTD then monthly hospital absentee rates by grade (short term and long term) ***-Collected by hospital*** **4. Hospital Activity *(Monthly)*** -Breakdown of YTD and monthly hospital activity by new and repeat: o Physio patients o OT patients o Social Workers patients -Break of YTD and monthly hospital diagnostic activity for: o Xray o Plain films o Ultrasound o CT Scan o MRI o Interventional -Breakdown of YTD and monthly hospital OPT Consultant led clinics per Consultant (coded) per speciality by new patient, return and DNA ***-Collected by hospital*** **5. Public Private Mix and Casemix Base Price *(Monthly)*** -Number of public and private discharges per hospital by specialty, elective/non-elective and inpatient/day case -Collected by PMU -Casemix adjusted base price per hospital

Figure 3. The original 12 key metrics of HealthStat for hospitals

3. ESTABLISHING DATA REQUIREMENTS

The HSE's Decision Support Unit established a high level cross-directorate working group in Spring 2007 and was working within the framework of the HSE's transformation programme *Project 5.3* to develop an integrated intelligence and analytical capability. The operational performance system requirement of September 2007 based upon 12 metrics areas, as mentioned above, was used as a springboard to launch a core metrics group tasked with focusing upon the detail of the data required. This group consisted of the CEO's performance advisor, the author, an external advisor and representatives from Corporate Finance, National HR, Casemix/Hospital Inpatient Enquiry (HIPE), National Hospitals Office (NHO), Primary Continuing and Community Care (PCCC), Corporate Planning and Control Processes (CPCP) and an operational performance expert from the Dublin Mid-Leinster network of hospitals. Each member was expected to be able to discuss performance data down to source level.

It was soon verified that, of the 600 or so data items required per hospital to fulfil the 12 metrics areas, approximately 80 percent were readily available on a monthly basis. The remainder of the data required was not centrally collected. Interestingly, the corporate units were unable or unwilling to extend their scope of collection and so it was decided by the group that direct collection of the new data from individual hospitals would be required and this task was to be performed by Decision Support. The consequences of this were to be much further reaching than the group could have imagined.

4. WHERE EXACTLY DID THE DATA COME FROM?

Four corporate HSE entities provided 80 percent of the data required. The Corporate Reporting Service (CRS) of the National Directorate of Finance provided six data items for each of the 36 hospitals. CRS consolidates the various financial reporting systems across the HSE. This left one hospital finance data item for Decision Support to collect that was not centrally available - year to date staff agency cost.

The National Employment Monitoring Unit (NEMU) of the National Directorate of Human Resources provided 30 data items per hospital. NEMU draws together HR information through the regions to gain a national picture. Decision Support was tasked with collection of an additional 41 hospital HR related data items that included clinician headcount per hospital specialty (Whole Time Equivalent WTE) and absenteeism.

The Performance Monitoring Unit (PMU) of the National Hospitals Office (NHO) provided 78 data items per hospital. PMU collects up to 5000 data items from individual hospitals on a monthly basis via an excel spreadsheet. Data from the National Treatment Purchase Fund NTPF was also provided via the PMU. Decision Support was tasked with collection of an additional 78 hospital operational performance data items that included Allied Health Professional (AHP) activity, radiological activity, waiting times for therapies and diagnostics tests, and consultant-led outpatient clinic activity and wait times.

HIPE data by Diagnosis Related Group (DRG), specialty and procedure was made available to HealthStat for 415 data items per hospital. One further set of data was the result of the Acute Hospital Bed Review which is a periodic report and was entered manually into the system by Decision Support.

The total remaining data requirement for collection by Decision Support was 120 new data items. Without this new data HealthStat would have been of limited use in measuring the times that people wait for services and the activity levels of the staff engaged in service delivery.

5. INFORMATION GOVERNANCE

At the outset there was very little existing in the HSE in the way of information governance associated with performance information. Information governance in this context was understood to include data definitions, data collection processes, and data audit. The HSE lacked a central function to assign metadata, data schema, definitions or ownership. Two notable exceptions to this situation were the NTPF and Casemix / HIPE data, both of which have national data collection systems and definitions assigned to the coding of data.

The Decision Support Unit found it necessary to assign data ownership, establish definitions, develop targets and consider data audit. The corporate data sources were designated as corporate owners of those datasets that they had agreed to supply to HealthStat. This meant that HealthStat took the data from CRS, NEMU, PMU and HIPE at face value. Definitions and audit responsibilities were laid at the

door of those parts of the HSE organisation. Ownership of the 120 new data items was assumed by Decision Support.

6. DATA COLLECTION

Decision Support devised standard data templates for monthly completion by the corporate sources. With input from the Metrics Group, Decision Support also produced a collection template for the new hospital data that included definitions and examples. That template, requesting data for August 2007, was distributed to 36 hospitals in late September 2007 via the NHO network organisation. It was partially pre-populated with those data items provided by CRS, NEMU and PMU for verification by the hospitals. The 36 hospitals chosen were those that participated fully in the Casemix programme at that time. This was used as an indication of the hospitals' ability to provide performance information.

All 36 hospitals returned their templates by the 17th October 2007 with a data completeness was around 90 percent. This was a pleasant surprise to the Metrics Group which had expressed some doubts about the collectability of the new data items. The Decision Support Unit, which by this stage had added two people to its team, fielded some 300 phone and email queries during the collection period and this no doubt eased the process.

The Metrics Group studied the supplied data and agreed an outline for graphical representation of the metrics in a performance dashboard. The work required to put together this dashboard, together with a number of outstanding queries from hospitals, influenced Decision Support to hold off with further data collection until an initial series of visits had been made to hospital management teams. It was also around this time that the concept of an accountability forum was developed by the CEO's performance advisor.

7. PRESENTATION OF THE DATA

As mentioned above, the 12 original measures categorised under AIR evolved into 600 data items per hospital. The Metrics Group spoke in terms of what the axes of the graphs would be but, until the first attempt at a dashboard was produced, nobody knew what it would really look like.

The first set of data from August 2007 was taken and placed into an Excel sheet. The 12 original measures turned out to have different aspects that required separate presentation and this resulted in some 37 graphs. These were discussed within the Metrics Group and during visits to hospitals (see next section). It soon became clear that individual preferences for histograms, data tables, pie charts and other representations were diverse. Despite myriad desires for detail, the dashboard concept was adhered to in that the graph for each metric was designed to give an initial visual indication of performance against a target.

8.TARGETS

Targets should be a driver for improvement. Decision Support was tasked with assigning targets to the performance dashboard. The approach agreed with the CEO and his performance advisor was that published targets took precedence. The initial brief was that where such targets were absent, the approach in 2008 would be peer group average performance as target, moving to best in Ireland in 2009 and then to international best practice in 2010.

The intention to use peer group average in 2008 did not last long. Markers for peer group average and best in class were placed on the dashboard graphs and examined. It quickly became clear that there was a wide variance in performance across the country and that peer group average would be a lesser level of performance for many. Consequently, best in class was adopted as the default target in the absence of any other. This was calculated by taking the average of the top three performers in the group.

The HSE produces an annual service plan for the Department of Health and Children (DoHC) that identifies the expected volumes of activity. It also includes performance targets for some hospital services e.g. elective procedure wait times for children should be less than three months. These targets, where they could be applied to individual hospitals, were and still are incorporated into the performance dashboard.

In 2009 HealthStat placed targets on 22 metrics **(Figure 4)**, many of these based upon comparable international targets e.g. 70 days for diagnostic tests, 90 days for outpatient clinic routine wait times, 75 percent of cases to be treated as day cases.

HEALTHSTAT – THE MEASURES AND THE TARGETS					
Access		Integration		Resources	
Metric	Target	Metric	Target	Metric	Target
A1a Adult Elective Procedures Wait Time	National target, less than 6 months	I1 Day Case Rates - Procedures	International target, 75%	R1 Variance from Budget	Budget is target
A1b Child Elective Procedures Wait Time	National target, less than 3 months	I2 Day of Procedure Admission Rate for Elective Inpatients	International target, 75%	R4 Staff WTE Variance from Staff Ceiling	Staff ceiling is target
A2 ED Acute Admission Wait Times	National target, less than 6 hours	I3b Inpatient ALOS adjusted for complexity and age	Individual hospital targets	R5 Percentage of Staff Hours Lost Due to Absenteeism	National target 3.5%
A3a GP to Hospital Referral Wait Times for Physio (routine)	International target, less than 70 days	I4a Overall ALOS (inpatients and daycases)	Best in Ireland target*	R8b AHP Hospital Activity (number of encounters per WTE)	Best in Ireland target*
A3b GP to Hospital Referral Wait Times for Diagnostics (routine)	International target, less than 70 days	I5 Percentage of Cases Entered into HIPE	National target, 80%	R10a Number of New Patients per WTE Consultant	Best in Ireland target*
A4a Consultant to Hospital Referral Wait Times for Physio (routine)	International target, less than 70 days	I7 Appropriateness of Admission and Care, discharge plans in place	National target, 60%	R10c Consultant Clinic DNA Rates	National target 10%
A4b Consultant to Hospital Referral Wait Times for Diagnostics (routine)	International target, less than 70 days			R11 Public vrs Private Split of Activity	National target 80 to 20 Public to Private Ratio
A5 Percentage of Clinics with wait time over 90 days	International target, zero waits over 90 days				
A6 Average Wait Times for OPD Consultant Led Clinics	International target, less than 90 days		Note: best in Ireland target is comparison against average of top three in peer group		

HealthStat

Figure 4. HealthStat for hospitals targets for 2009

9. TRAFFIC LIGHTS

It can be difficult to ascertain how close to target the performance of an individual unit is. The method adopted by Decision Support was to assign traffic lights to a number of dashboard metrics where there was a clearly desired performance level. General thresholds were set that allowed performance within 10% of target to achieve a green light. Performance between 10% and 40% of target was awarded amber and beyond 40% red. The lights in each section were simply aggregated, without any weighting, to give a light each for Access, Integration and Resources and an overall light for the hospital.

This approach did attract some criticism but served the very useful purpose of drawing attention to those areas where each individual hospital excelled or had serious challenges. A document called the *Metrics Dictionary* was created. This included background to the performance dashboard process but, most importantly, contained factsheets for each of the dashboard metrics (see Appendix II). Appendices to the document listed details such as the mapping used for HIPE data.

In 2009, the traffic light thresholds of 10% and 40% were adjusted to 15% and 35% with the intention of giving a broader spread of results. It is intended that a facility for weighting of metrics will be added during 2009.

10. INTERACTION WITH HOSPITALS

During November and December 2007, the Decision Support Unit met with seven hospital management teams to discuss the fledgling performance dashboard and associated data. Looking back at the meeting notes, it was a baptism of fire. Each hospital fully engaged themselves in discussion of every single data item and metric. Suggestions for new, different and enhanced performance measures abounded.

This was a steep learning curve for Decision Support. It had been the intention to visit a few hospitals of different size and location in order to verify the data from the corporate sources, work out any vagaries with the new data items and gain hospital feedback on the dashboard format. From the very first visit in Galway it became clear that the various factors influencing a hospital's performance e.g. historical, clinical, infrastructure, were essential context for any intelligent analysis of the performance dashboard. The author and the CEO's performance advisor agreed that all 36 hospitals would need to be visited and that a hospital's dashboard should not appear in the HealthStat forum until the visit had taken place.

After the initial wave of visits, a collection of November 2007 data took place, this time omitting the verification of pre-populated data from corporate sources as that had been substantially verified during the hospital visits. For resolution of any discrepancies with that corporate data, hospitals were directed towards the corporate source of data in accordance with Decision Support's information governance rules. The hospital visits continued and collection of December 2007 data took place in January 2008, based upon a collection template that had been refined with the input of ten hospital visits.

11. THE COMMON DENOMINATOR COMPROMISE

Every visit by Decision Support to a hospital yielded a wealth of information about each hospital's individual circumstances. One hospital would be almost totally driven by Emergency Department (ED) activity. Another would treat only adults, and no children, but had a national specialty that could potentially distort the overall performance picture. In an area of a large city, there might be a dearth of General Practitioners (GPs) leading to a high number of inappropriate presentations at the ED and so on. Every hospital wanted the metrics adjusted to show their activity in a full and fair, often favourable, light. Subsequent meetings with representatives of particular healthcare professions called for full, in-depth representation of all their activity. A commonly occurring theme of such meetings was that groups which initially objected to the provision of a handful of monthly data items would conclude the meeting by offering a hundred in a desire to fully reflect all that their jobs entailed.

Decision Support's approach was to continuously drive for commonality in interpretation of what data was required, using practical examples wherever possible. This allowed each metric to become a common denominator of performance. The circumstances of each individual hospital were then taken as context to inform the performance analysis that would be subsequently presented to the CEO in advance of the monthly HealthStat forum.

12. KNOWING YOUR LIMITATIONS

This section looks at interpretation of the HealthStat dashboard with reference to specific examples as depicted in Appendix III.

The measure used to determine the waiting time for surgical and medical electives procedures, A1a and A1b, has its source in the Patient Treatment Register (PTR) of the NTPF. Adult and child patients waiting for elective procedures are shown in time bands. As HealthStat spreads throughout the entire acute hospital sector it begins to engage with some hospitals that are not participating in the NTPF. This means that this metric will be blank for those hospitals. That is one obvious limitation. What is less obvious is that many patients are given a booked appointment for their procedure without ever having to join a waiting list and those patient numbers do not appear on the PTR. The result is that an uninformed observer will assume that all HSE public patients experience a waiting time for elective procedures whereas a substantial proportion have little or no wait before they receive their healthcare. HealthStat's intended solution for this is to find a way of showing the proportion of patients that proceeded immediately to booking without waiting.

The ED metric A2 shows the wait times experienced by ED attendees for whom a decision has been made to admit them to the hospital. This should not be confused with how long people wait to be seen in the ED and how long they spend in the ED, both of which are potential ED efficiency measures. ED admission waits A2 is, in fact, the infamous *Trolley Waits* that are recorded at 2pm every day and aggregated for the month. There are two aspects of this metric that are worth knowing. Firstly, ED admission waits are generally an indication of whether there are downstream process bottlenecks within the hospital, e.g. beds unavailable which can be due to a number of factors. Secondly, the 2pm snapshot does not produce a statistically significant sample for all hospitals. Depending upon the daily pattern of ED presentations, the 2pm snapshot might show up to around 50% of all ED volume in continuously busy EDs and as little as 1% in hospitals where the volume activity does not occur near the 2pm snapshot. Further, the data for A2 is only available for hospitals that are included in the HSE Winter Initiative. The future may be to extend the existing measure to all admissions at any time of day and to add an ED efficiency metric such as *time in time out* when that becomes more widely available.

Diagnostic routine wait times A3b has challenges that are common in several other metrics, namely that an attempt is made with this metric to judge a hospital's overall access performance in a particular area of activity that is not uniformly available across the health system. A3b groups together the routine wait times for radiological tests referred to the hospital by GPs and gives a traffic light against a target of 70 days that is placed upon the overall average wait time. The incomparability of wait times for the different types of tests (X-ray is usually shorter than target, MRI longer) means that the overall result is dependent upon the available mix of radiological tests. Ultimately, it might be possible to assign targets to the individual test wait times and aggregate those in a fairer fashion but the current approach is for a hospital to judge itself against its own performance and that of hospitals with comparable service provision on a month to month basis.

Consultant-led outpatient clinics (OPD) are an area of specific focus for HealthStat. There are several metrics that refer but the key measure is the wait time that patients experience for a routine OPD appointment on referral by their GP A6. Data on individual clinics are submitted by each hospital and this is aggregated up into 'super specialties', e.g. General Medicine. The target is a routine wait time of 90 days or less. The averaging of the wait times to an overall number means that this is merely the mean value of the distribution. The solution used in HealthStat is to add another metric A5 which shows how many clinics exceed the 90 day target. This has proved very helpful in guiding hospital focus in the direction of those clinics that are performing outside target.

Data collection for OPD proved to be a challenge during the pilot year with two main issues. The first OPD data issue was due to the six 'super specialties' considered by HealthStat, a necessary compromise for presentation purposes. Hospitals have, in fact, up to 50 or more different specialty names for their OPD clinics. In order to retain granularity of data for analysis it was the intention to collect details from hospitals of every OPD specialty clinic but it soon became apparent that there was a lack of uniformity in naming / spelling of the specialties. HealthStat's approach to this was to develop a mapping of the numerous specialties to the six 'super specialties' and persuade hospitals to provide their data in the mapped format in their collection templates.

The second OPD data issue was the lack of consistency in the number of clinic sessions per month and the duration of those sessions. This made comparable measurement of activity, specifically the

throughput levels of new patients, very difficult. After several months of trying to find a way around the issue HealthStat hit upon measuring throughput of new OPD patients per WTE consultant R10a – using the basic concept of relating the activity specifically to the resource producing that activity. This allows a hospital with long OPD wait times to consider whether the throughput of new patients is adequate for demand and waiting list backlog. The hospital Clinical Director can then, if necessary, take steps to address the situation. In order to ensure accuracy with this metric it is essential that the hospital submits accurate WTE figures for consultants delivering those OPD clinics. For example, a consultant based at hospital X but spending only three days per week there and two days visiting hospital Y must have the relevant portions of WTE allocated accordingly. This WTE consultant data is not available from NEMU but is included in the HealthStat hospital template. As with all metrics, it is essential that HealthStat communicates to hospitals an understanding of the use to which the collected data is put so that accuracy is ensured.

Whilst this activity was ongoing, the PMU changed its mind about collecting OPD data and started a parallel data collection process in January 2009. This means that HealthStat will be able to dispense with direct collection of OPD data, delegating the information governance of that dataset to the PMU.

HIPE data is a fantastic source of information for performance measurement processes such as HealthStat. An individual computerised record is created in HIPE every time an inpatient or day case is discharged from a hospital. This contains patient-specific data regarding demographics, diagnoses and treatment. More than 250 people are working continuously across the country to maintain a continuous record of patients that is comprehensive and internationally comparable. However, taking more than a million annual patient experiences and summing them up on a HealthStat dashboard requires an element of caution and this experience has provided another learning curve for all involved in HealthStat.

The key HIPE-based performance measures for HealthStat were identified as day case rate, day of procedure admission rate and average length of stay (ALOS). The first step was to determine which dataset would be used to produce these metrics. HIPE records are created when the patient is discharged and the HIPE rule at the start of the HealthStat project was that all discharges occurring more than three months previously should be coded into the HIPE system. Taking this into account, a time-window of data was taken rather than the data-month approach of the other HealthStat datasets. The Casemix Unit, which is the HSE side of the HIPE system run by the ESRI, informed the Metrics Group that HIPE records were consistent and it was hoped that a partially complete time window would be statistically representative. However, examination of the preceding three months showed that only 53 percent of the 36 HealthStat hospitals were above 50 percent complete with their coding. This led to the selection of a 12 month rolling total for the HIPE data, one month in arrears, and that was the basis for the HealthStat dashboard Integration section throughout 2008 and into 2009.

The HealthStat dashboard maintains an eye on HIPE completeness I5. The HIPE coding rule was shortened to ten weeks in late 2008 and a considerable improvement in HIPE completeness has been noticed since then. It is intended that HealthStat will move in the future to a shorter HIPE time window, better reflecting trends which are currently slow to feed into the 12 month picture.

Following the mid 2008 review of the HealthStat dashboard, several changes were made to the presentation of HIPE data from January 2009 onwards. The order of the Integration metrics was changed to better reflect the likely chronological path of a patient journey. Day case rate I1 was moved to the front of the Integration section and a target of 75% was set against a basket of 24 procedures, rather than against all day cases as previously. The ALOS I3a had been presented throughout 2008 as average length of stay without taking into account the varying complexity of cases handled by different hospitals and the age profile of each hospital's inpatients. It was known that the level of complexity of cases varied across the system by a factor of three or more and this made ALOS comparability between hospitals elusive. From January 2009, HealthStat took a new approach that assigned a target ALOS per hospital, adjusted for complexity and age for each individual hospital. The additional metric that resulted I3b was the overall variance against that target, a measure that is far more comparable than raw ALOS.

13. THE BRANDING OF HEALTHSTAT

During the project development phase the working title of the project was *Control Metrics*. This was, firstly, a misnomer as the focus was on performance improvement and not control. Secondly, the title was uninspiring and subject to a raft of negative connotations.

The framework of 12 overall metrics supplied by the CEO and his performance advisor was originally provided under the headings of resources, integration and access. These headings, whilst intuitively appealing to those close to the health service, were not particularly memorable.

As the performance accountability forum concept was further developed, the author and the CEO's performance advisor felt that some branding effort was required and, in good HSE fashion, adopted the acronym *AIR* for access, integration and resources. Baltimore City's Citistat, the model for the forum, provided the idea of *HealthStat* as the official name for the entire approach. Whilst this name is not internationally unique, it was new to Ireland and proved to be a recognisable label when the system subsequently moved into the public domain.

14. THE HEALTHSTAT FORUM

Citistat in Baltimore is a weekly event at which one of the city's managers will be placed under the spotlight and held to account on statistical and photographic evidence of performance, good and bad. The process is interrogative, high pressure and potentially confrontational. HealthStat took some elements of this and adapted the approach to the HSE's context. A monthly HealthStat forum was conceived with a formal layout of the CEO and HealthStat team on one side, the service directorate on the other and an observers' row placed adjacent. The emphasis was on a CEO-led dialogue on performance but an element of surprise was retained with respect to the areas that the CEO would address.

HealthStat's first forum was held on the 12th February 2008. It looked at the performance dashboards of the ten largest hospitals in the country, derived from December 2007 data. Prior to the forum, the CEO of the HSE had been briefed by his performance advisor and Decision Support on some systemic performance issues across the group and on individual hospital performance.

At the forum the HealthStat table included the CEO, his performance advisor, the national directors of Finance and HR and the author. The hospitals' table included the national director of hospitals and her eight network managers. Observers included other HealthStat team members including the external advisor.

With the forum chaired by his performance advisor, the CEO initiated discussion on the key systemic issues of the long routine wait times for consultant-led outpatient clinics and the high levels of absenteeism across the system. The National Hospitals Office (NHO) agreed to take actions to investigate these issues as well as several areas of interest or concern regarding the ten individual hospitals.

This format continued throughout the year, excluding August, with different hospitals featuring every month. During the first half of the year there was much discussion about data integrity. Adjustments were made to definitions and the Decision Support hospital liaison continued. By May 2008, all 36 participating hospitals had been visited. At that point it became generally accepted that there was some uniformity of data reporting across the hospitals, that they took responsibility for their own data and that the metrics shown in the HealthStat dashboards were fundamentally factual.

National projects were periodically featured in the forum and most hospitals came up for discussion twice or more. An action log was kept and followed up on a regular basis, but by Autumn 2008 it became clear that, if performance improvement on the ground was to be progressed, the time had come to engage individual hospitals directly in the forum.

On November 6th 2008 five hospitals were featured in the forum. For the first time they were represented not just by their network managers but by the hospital CEOs / General Managers and Clinical Directors. This brought the performance dialogue to a level of detail such that the challenges facing a hospital could be visualised in the forum. There were far fewer actions arising than had previously been the case, those earlier actions mostly being information requests that could now be answered directly by the managerial and clinical leaders of the hospitals. In each subsequent forum between four and six hospitals featured and the dialogue was fascinating. A high level of engagement and cross-fertilisation was witnessed. March 19th was the first forum at which hospital leaders from 6th November began to reappear and, at this point, the commitment to hospital specific performance improvement action plans began to emerge. This may have been due in part to the second visit aspect but undoubtedly the then imminent publication of HealthStat performance dashboards in the public domain played a role.

15. EVOLUTION OF THE HEALTHSTAT HOSPITAL DASHBOARD

From the outset the intention of the HealthStat dashboards was to provide graphical presentation of individual hospital performance without production of data tables or league tables. Ultimately, the aim was to place justifiable targets on as many metrics as possible, measuring individual hospitals against those targets and encouraging a uniform, high standard of performance across the system.

The first dashboard to be used in a HealthStat forum on Feb 12th 2008 was based upon December 2007 data. This was the third iteration of data collection, previous collections having been made for data from August and November 2007. The Excel based dashboard was highly condensed, placing 37 graphs on just four A4 pages. Reading glasses were required for some of the miniscule print, but the format was maintained in the interest of keeping the dashboard down to those four pages.

Production of the HealthStat dashboard in Excel was highly labour intensive and prone to error, due to constantly evolving requirements and the complexity of the Excel-based tool. The process of cleansing the data was very laborious. In order to produce error-free dashboards a multi-level quality control was required. This was all carried out by a third party. Decision Support's role at that point was to manage the development of the dashboard, collect the monthly data from hospitals and corporate sources, feed that data to the third party for dashboard production and then run the HealthStat forum based upon those dashboards. The situation, necessitated by the HSE's limited resources and experience in that field, was accepted as an interim state and a project was initiated by Decision Support in January 2008 to migrate data collection and dashboard production into a technological solution based upon existing HSE ICT hardware architecture and software licences.

By the start of May 2008, the HealthStat technological solution was in test phase. A secure web platform permitted log-in with user name and password. Different levels of user rights were available to hospital staff, hospital management, corporate data providers and Decision Support administrators. Data could be uploaded directly by hospitals and corporate providers or submitted via email to Decision Support who would then upload the data. An upload error log provided valuable information to guide Decision Support in data cleansing requirements. The database was Oracle and the graphics package used to produce the dashboards was Business Objects. By the end of May, many hospital data providers had attended training workshops and around two hundred users were registered on the system. Then a totally unpredicted disaster struck.

16. COPING WITH THE UNEXPECTED

Towards the end of May 2008, the IMPACT trade union announced that none of its staff were to cooperate with any of the performance management systems within the HSE. Along with several other performance related services, HealthStat was named. This was in response to several system-wide industrial relations issues between the HSE and the trade union. Whatever about the rights and the wrongs of the situation, most of the individuals providing performance data to HealthStat were members of that trade union and obligated to follow union instructions. The flow of hospital performance data began to dry up immediately. The effect of this was that HealthStat data returns for May through to August were totally absent for many hospitals and partially complete for others. The corporate returns from the PMU and NEMU were unavailable during that period. Casemix HIPE data was unaffected, being an embedded part of hospital administration and not subject to the trade union action.

The HealthStat forum managed to maintain momentum despite the decreasing data returns. The July forum was the last month that the excel tool was used to generate dashboards. August was a holiday month, September forum was cancelled due to an emergency budget meeting with the DoHC and October dealt with all outstanding issues in the HealthStat action log. The November 2008 forum saw the new look dashboard, based upon September 2008 data and produced with Business Objects. This new dashboard was cosmetically different, covering eight pages and using much larger graphs. The missing data, caused by the industrial action, and resulting dashboard hiatus over the summer had eroded the familiarity of stakeholders with the dashboard and the new format was introduced with little adverse comment. Another more consequential change at the November forum was that the hospital CEOs/General Managers and Clinical Directors were invited to the forum to participate in the performance dialogue.

17. EVOLUTION OF THE HEALTHSTAT METRICS AND PUBLICATION OF DASHBOARDS

Hospitals had expressed a desire from the outset to have a periodic review of the dashboard metrics. It was agreed with the NHO that an externally led review would be conducted to refine the measures and their presentation. A process of interviews was followed by a workshop and the result was general confirmation of the intuitive set of metrics originally proposed by the CEO and his advisor. Some future additional areas for measurement were identified, such as an extended list of therapies and categories of delayed discharges, and a number of refinements proposed for existing metrics. The most important of these was to compensate the Average Length of Stay (ALOS) data for complexity and age profile, allowing true comparison between hospitals for the first time.

A decision was taken to prepare a revised version of the dashboards that would be implemented with the turn of the calendar year. This coincided with the point in time chosen to publish HealthStat on the internet.

18. LAUNCHING HEALTHSTAT INTO THE PUBLIC DOMAIN

Decision Support launched the revised 2009 dashboard at the 19th March forum. On 23rd March, the dashboards for 29 hospitals were published on the HSE internet site, together with explanatory plain English text and supporting documents. The timescale for receipt of January data, testing the revised dashboard that contained refined metrics with tighter targets and narrower traffic light bands, publishing for the March forum and release onto www.hse.ie was very tight, allowing little margin for error. A successful launch was somehow achieved with a detailed health journalists briefing on 20th March and a general media launch on the 23rd. Media reaction was positive in the press, on radio and television, applauding the HealthStat process with even the harshest critics of the HSE giving it credibility. The media focus moved immediately onto those individual hospitals that were performing badly against targets. That is the expectation for the future media focus and adds an element of public scrutiny to the HealthStat process.

The HSE Communication Department, Decision Support and the CEO's performance advisor invested a great deal of time and effort in preparation for the public launch of HealthStat and the author extends his thanks to all involved. You know who you are.

19. NEXT STEPS

Throughout 2009 HealthStat will roll out to all general and specialist hospitals. HealthStat is piloting the process in the community health and social care services provided by the HSE and voluntary agencies. When that develops to a stable state it will also migrate into the HealthStat technological solution.

In the future, in order to fully exploit the potential of the HealthStat system and process, analysis capabilities down to raw data level will be required. This will enable the healthcare delivery units to focus their performance improvements in a quantifiable manner.

From an information governance perspective, HealthStat looks to the future where master data management in the HSE will guide definition and ownership of healthcare data, coordinating with other key healthcare stakeholders. HealthStat anticipates a fully integrated business intelligence function in the HSE that will seamlessly extract data from the process and help guide Irish public healthcare performance towards excellence.[95]

[95] For further information please go to http://www.hse.ie/eng/Healthstat/ where you will find: A plain English overview of HealthStat; Traffic lights and performance dashboards for HealthStat hospitals; and, Downloads including the HealthStat for Hospitals User Guide.

APPENDIX I - KEY TO ACRONYMS IN THE HSE'S WORLD OF PERFORMANCE INFORMATION

CA	Consumer Affairs (a unit of the HSE)
CEO	Chief Executive Officer
CIS	Clinical Indemnity Scheme
CPCP	Corporate Planning and Control Processes (a National Directorate of the HSE)
CPM	Corporate Performance Measurement - (an HSE measurement system against the HSE 3 year Corporate Plan)
CPU	Central Pharmaceutical Unit (a unit of the HSE)
CRS	Corporate Reporting Services (a unit of the HSE)
CSO	Central Statistics Office
DoHC	Department of Health and Children
EAG	Expert Advisory Group (a unit of the HSE)
ESRI	Economic and Social Research Institute
HIPE	Hospital In-Patient Enquiry (patient-level data system in all Irish acute hospitals)
HIQA	Health Information Quality Association
HPSC	Health Protection Surveillance Centre
HR	Human Resources (a National Directorate of the HSE)
HRB	Health Research Board
HRBS	Human Resources Business Systems (a unit of the HSE, incorporating former PPARS)
HSE	Health Services Executive
ICGP	Irish College of General Practitioners
ICT	Information and Communications Technology (a National Directorate of the HSE)
IHCA	Irish Hospital Consultants Association
INO	Irish Nurses Organisation
LHO	Local Health Office (service delivery units of the HSE PCCC)
NCR	National Cancer Registry
NCU	National Communications Unit (a unit of the HSE)
NEMU	National Employment Monitoring Unit (a unit of the HSE)
NHO	National Hospitals Office (a National Directorate of the HSE)
NSP	National Service Plan (the annual plan agreed between the HSE and DoHC)
NTPF	National Treatment Purchase Fund
OECD	Organisation for Economic Co-operation and Development
PAD	Parliamentary Affairs Division (a unit of the HSE)
PCCC	Primary, Community and Continuing Care (a National Directorate of the HSE)
PCRS	Primary Care Reimbursement Services (a unit of the HSE)
PCT	Primary Care Team
PH	Population Health (a National Directorate of the HSE)
PHIS	Public Health Information System
PI	Performance Indicator
PME	Performance Measurement and Evaluation (a unit of the HSE PCCC)
PMU	Performance Monitoring Unit (a unit of the HSE NHO)
Proc	Procurement (a National Directorate of the HSE)
RSA	Road Safety Authority
SPRI	Strategic Planning and Reform Implementation (a unit of the HSE)
SRSB	Special Services Residential Board
Tx	Transformation (The HSE's transformation programme)
VFM	Value For Money (a unit of the HSE)
WHO	World Health Organisation
WI	Winter Initiative (an HSE project)

APPENDIX II - EXAMPLE OF HEALTHSTAT FOR HOSPITALS FACT SHEET

Metric Name: A6 – Average Waiting Time for OPD Consultant Led Clinics

Description: Visual representation of the length of time in calendar days to the next available routine referral to a consultant led OPD clinic. This is presented both overall and by the following specialty groupings (Paediatrics, Otolaryngology, Orthopaedics, Ophthalmology, General Surgery and General Medicine).

Note: the mapping used for these specialty groupings is shown in Appendix C

1. Source of Data Inputs:

Section 1.8 of the HealthStat monthly hospital template (see Appendix B)

2. Reporting Frequency:

Monthly

3. Owner:

Decision Support

4. Reporting Entity:

Hospitals

5. Target:

All routine referrals should be seen within 90 days.

Source: This target is not formally specified but has been set by HealthStat to 90 days using as a basis, the assessment of targets and wait times in other comparable countries.

6. Calculation:

Metric Calculation

Overall figure = (sum of wait times for all consultant led clinic) / total number of clinics

Specialty figure = (sum of wait times for consultant led clinics in that specialty) / number of consultant led clinics in that specialty

Traffic Light Calculation

n = (overall routine referral wait time / 90 days) * 100.

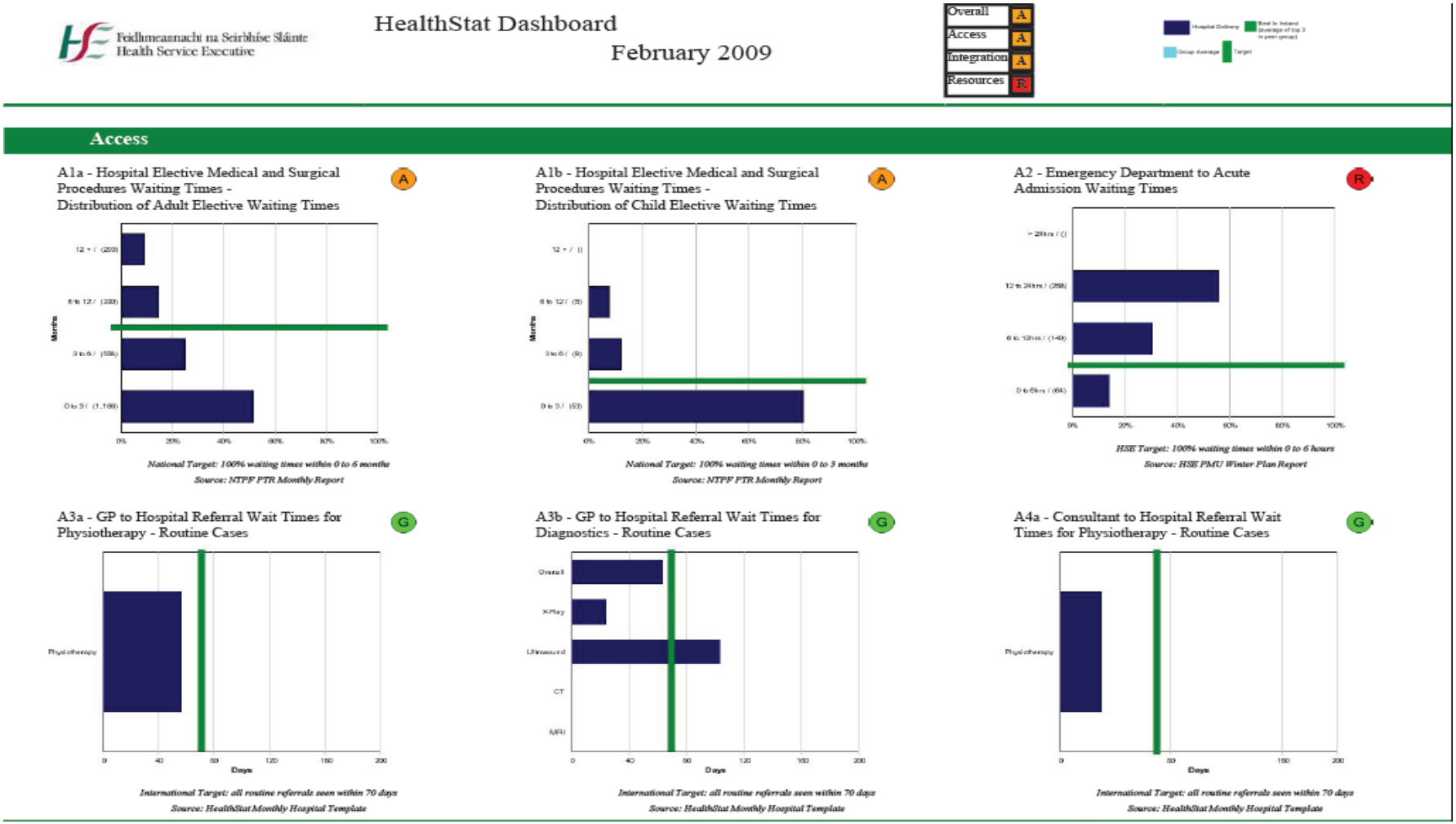
7. Traffic Light Rules:

If n is 135% or more then the traffic light is Red;

If n is greater than or equal to 115% but less than 135% then the traffic light is Amber;

If n is less than 115% then the traffic light is Green.

Appendix III Example of HealthStat for hospitals dashboard February 2009



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HealthStat Dashboard

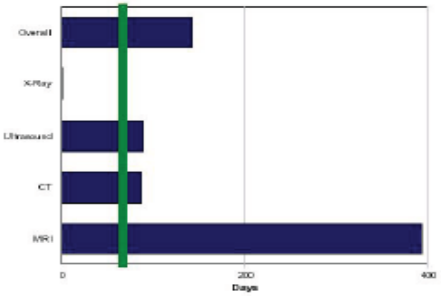
February 2009

Overall	A
Access	A
Integration	A
Resources	R

Access

A4b - Consultant to Hospital Referral Wait Times for Diagnostics - Routine Cases

R

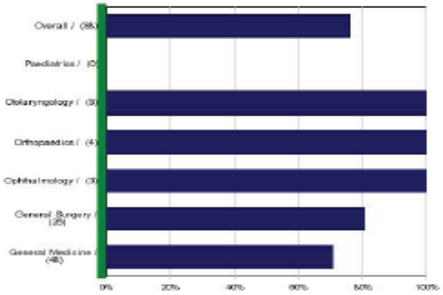


International Target: all routine referrals seen within 70 days

Source: HealthStat Monthly Hospital Template

A5 - Percentage of Consultant Led Clinics with a Routine Waiting Time over 90 Days

R

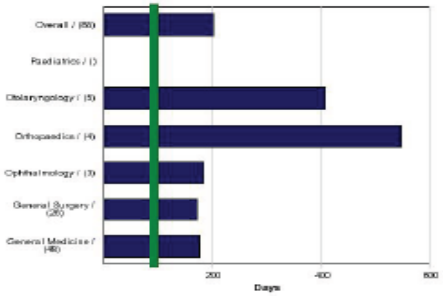


International Target: 0% of clinics having a wait time over 90 days for a new routine referral

Source: HealthStat Monthly Hospital Template

A6 - Average waiting time for OPD Consultant Led Clinics

R



International Target: all new routine referrals seen within 90 days

Source: HealthStat Monthly Hospital Template

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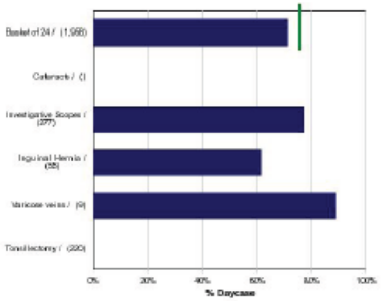
HealthStat Dashboard
Beaumont Hospital - February 2009

Overall	A
Access	A
Integration	A
Resources	R

Integration

I1 - Day Case Rates - Procedures

G

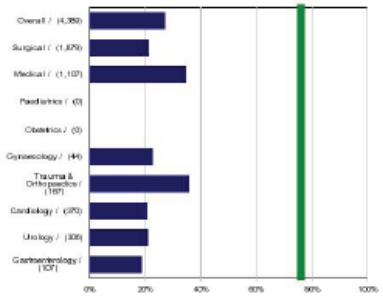


International Target: 75% of Basket of 24 Procedures to be treated as Daycases

Source: Casemix

I2 - Day of Procedure Admission Rate for Elective Inpatients

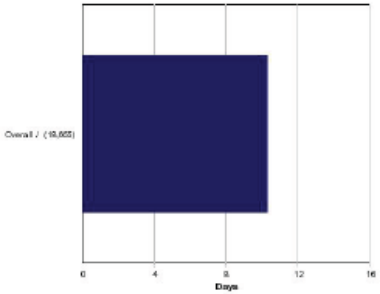
R



International Target: 75% of Elective Inpatients to be admitted on day of procedure

Source: Casemix

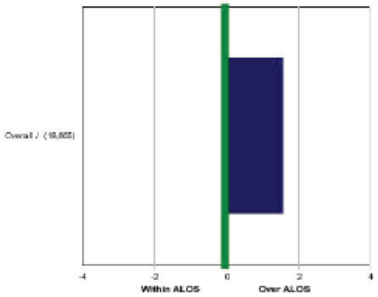
I3a - Inpatient Average Length of Stay - for information



Source: Casemix

I3b - Inpatient Overall Average Length of Stay Variance Adjusted for Age and Complexity

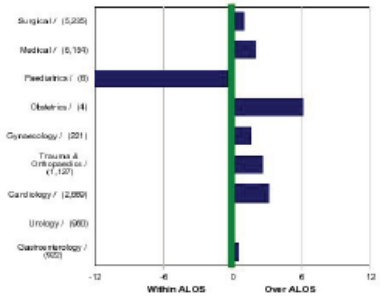
A



HSE Target: Adjusted peer performance for overall ALOS

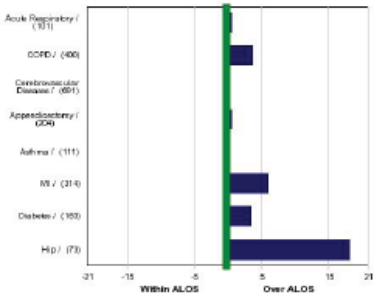
Source: Casemix

I3c - Inpatient Average Length of Stay Variance Adjusted for Age and Complexity by Specialty - for information



Source: Casemix

I3d - Average Length of Stay Variance by Adjusted Primary Diagnosis - for information



Source: Casemix

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HealthStat Dashboard

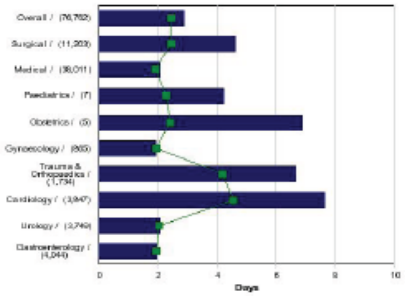
February 2009

Overall	A
Access	A
Integration	A
Resources	R

Integration

I4a - Inpatient and Daycase Average Length of Stay by Specialty

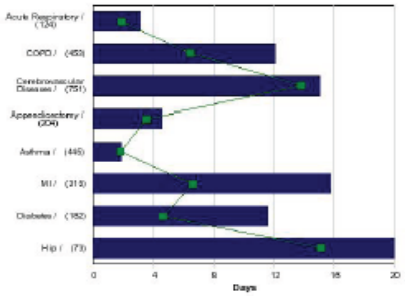
A



HSE Target: Peer performance for overall ALOS

Source: Casemix

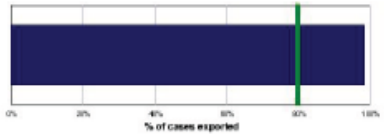
I4b - Inpatient and Daycase Average Length of Stay by Primary Diagnosis - for information



Source: Casemix

I5 - Percentage of Cases Entered into HIPE

G



HSE Target: 80% of cases exported

Source: Casemix

I6 - Delayed Discharges - for information

Source: HSE PMU Delayed Discharge Report

I7 - Appropriateness of Admissions and Care

A

	Actual		Average	
	Previous	Current	Previous	Current
% inappropriate admissions	5.0%	8.0%	10.0%	11.8%
% inappropriate occupancy on day of study	30.0%	35.0%	37.5%	34.1%

% with Discharge plan	55.0%	49.6%	39.9%	47.9%
% with Discharge date	6.0%	12.0%	15.0%	13.5%

HSE Target: 60% of patients with discharge plan

Current Source: Acute Hospital Bed Review (May - June 2008)
Previous Source: Acute Hospital Bed Review (Jan - Feb 2007)

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HealthStat Dashboard
Beaumont Hospital - February 2009

Overall	A
Access	A
Integration	A
Resources	R

Resources

R1 - Finance And Resource Usage

R

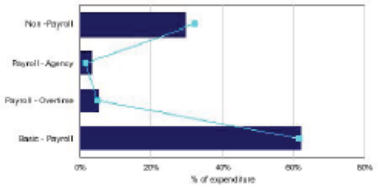
YTD Expenditure Actual (000's)		€ 47,674	
YTD Expenditure Budget (000's)		€ 45,779	
Variance (000's)	€ 1,895	Percentage	4.1%

Casemix adjusted base price	€ 4,921.00
Casemix % Variance of peers	-0.77

HSE Target: on or under budget

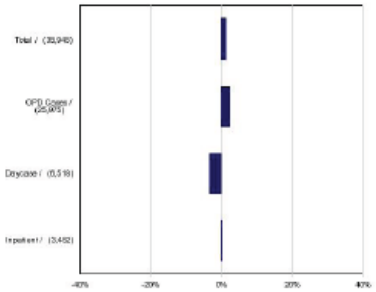
Source: Finance Corporate Reporting Services and Casemix base price

R2 - Financial Breakdown - for information



Source: HSE Corporate Reporting Service

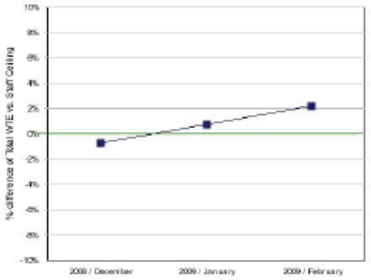
R3 - Activity vs. Service Plan - for information



Source: HSE Performance Monitoring Unit

R4 - Staff WTE Variance from Staff Ceiling

R

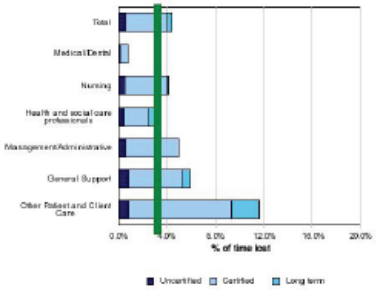


HSE Target: on or under staff ceiling

Source: HSE National Employment Monitoring Unit

R5 - Percentage of Staff Hours Lost Due to Absenteeism

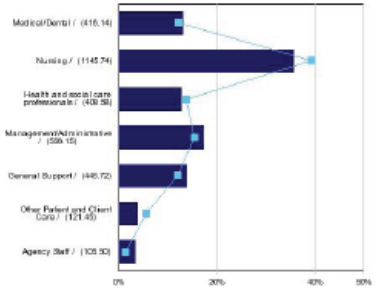
A



HSE Target: 3.5% or less total absenteeism

Source: HealthStat Monthly Hospital Template

R6 - Distribution of Staff - for information



Source: HSE National Employment Monitoring Unit

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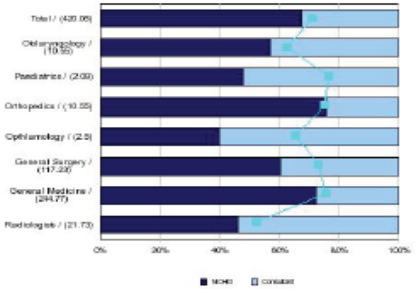
HealthStat Dashboard

February 2009

Overall	A
Access	A
Integration	A
Resources	R

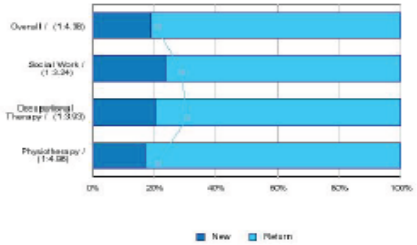
Resources

R7 - NCHD vs. Consultant Ratio - for information



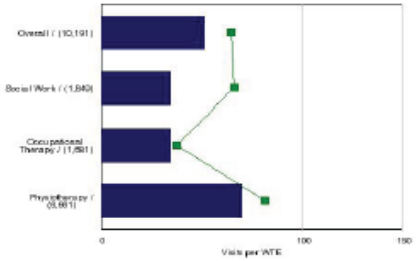
Source: HealthStat Monthly Hospital Template

R8a - Allied Health Professional Distribution of Patient Attendances - for information



Source: HealthStat Monthly Hospital Template

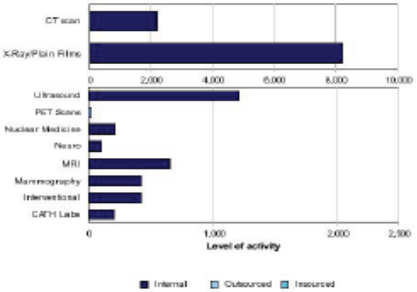
R8b - Number of New and Return Visits per Whole Time Equivalent



HSE Target: Best in Class of Group

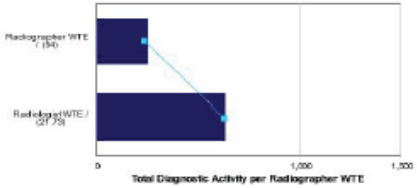
Source: HealthStat Monthly Hospital Template

R9a - Total Hospital Diagnostic Activity (Radiology) - for information



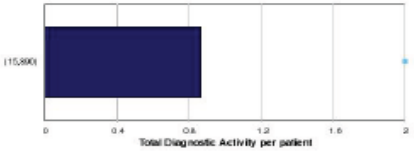
Source: HealthStat Monthly Hospital Template

R9b - Hospital Diagnostic Activity per Whole Time Equivalent Radiographer and Radiologist - for information



Source: Radiographers WTE - HSE Staff Census

R9c - Total Hospital Diagnostic Activity per Patient (Radiology) - for information



Source: HealthStat Monthly Hospital Template

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Health Service Executive

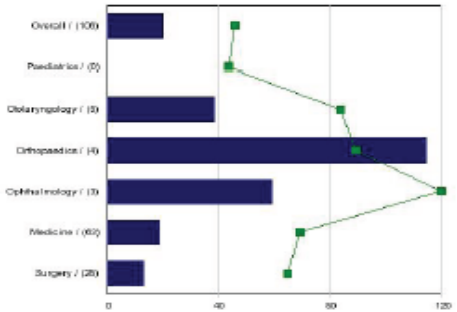
HealthStat Dashboard

February 2009

Overall	A
Access	A
Integration	A
Resources	R

Resources

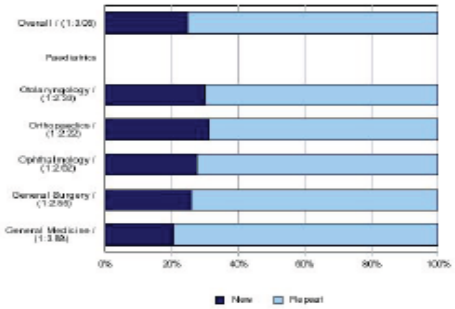
R10a - OPD Consultant Led Clinics - Number of New Patients Seen per Whole Time Equivalent Consultant



HSE Target: Best in Class of Group

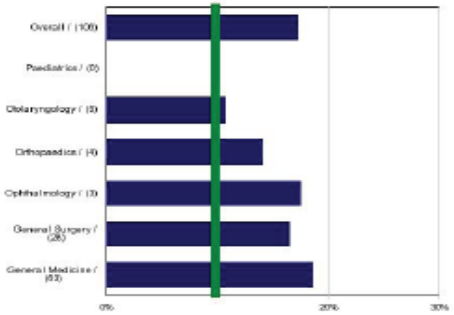
Source: HealthStat Monthly Hospital Template

R10b - OPD Consultant Led Clinics - Distribution of Patient Attendance - for information



Source: HealthStat Monthly Hospital Template

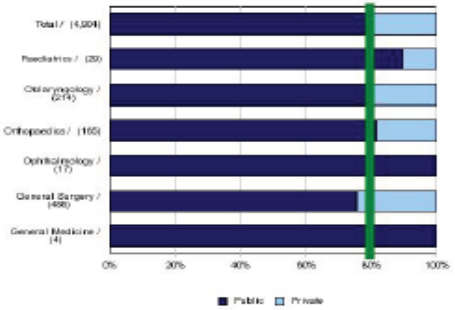
R10c - OPD Consultant Led Clinics - Percentage of Patients that Did Not Attend



HSE Target: DNA Rate of 10% or less

Source: HealthStat Monthly Hospital Template

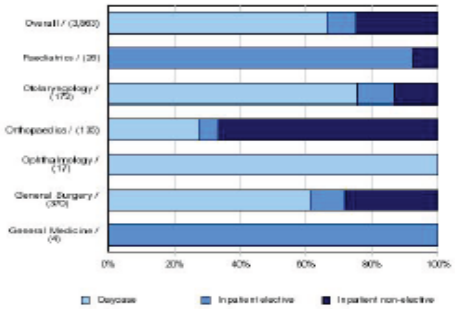
R11 - Public Private Split of Activity



Target: 80% Public Activity

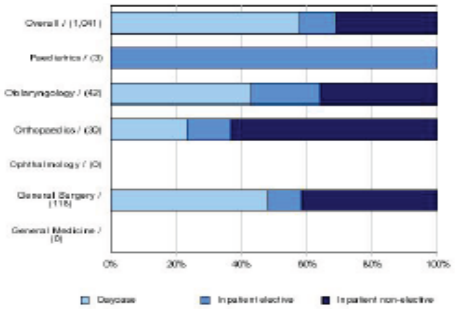
Source: HSE PMU Monthly Return

R12a - Acute Activity - Public - for information



Source: HSE PMU Monthly Return

R12b - Acute Activity - Private - for information



Source: HSE PMU Monthly Return

FIRST VOTE OF THANKS, CHARLES NORMAND, EDWARD KENNEDY PROFESSOR OF HEALTH POLICY AND MANAGEMENT, TRINITY COLLEGE DUBLIN

Aims

It is easy to be negative and critical about any information system set up to support management, since such systems always represent both scientific and management compromises. My aim in these comments is to do three things:

- Put Healthstat into a historical and conceptual context
- Discuss generic issues in performance measurement and management
- Comment on some features of Healthstat

What is HealthStat?

Since the design of any information system depends on its purposes, it is useful to start by asking question about the specific focuses of HealthStat. It is possible to identify at least three roles it could be trying to fill, and to some extent the discussion about the need for a system in the paper covers all three.

- Performance indicators
- Performance management tool
- Monitoring tool

Performance indicators do not aspire to answer questions, but simply to draw attention to anomalies that justify a closer examination. In developing such indicators an organization will opt for low cost, relatively little concern for accuracy, but will be keen to ensure that data are available quickly and easily. Data systems can also be developed with a more substantial objective of supporting performance management. Fuller, more accurate data are needed for such a role, since some substantive judgments may be made from the data. However, there remains some need in this case for the data to lead to discussion and review, since the information may not take full account of local differences and constraints. A further possibility is that the aim is to monitor performance against agreed and validated targets. In such a case the need is for the indicators to reflect very fully the agreed organizational objectives, and to be relatively free of errors and anomalies. At this relatively early stage in the development of HealthStat it might be useful to look carefully at the level at which the system is designed to operate, and to consider its fitness for the agreed purposes. In making such judgments it may be useful also to consider the extent to which action to remedy poor performance is possible – are there any levers of power, and are they connected to anything?

Some history of performance indicators

Work to develop indicators of performance in the public sector, and in the health sector can be traced to the movement toward rational planning in public services in the 1960s. In the 1970s, there was extensive focus in several countries on trying to find ways to improve performance of public sector bodies, and in some cases they were reorganized into corporate bodies that more closely mimic private companies. The first relatively robust health service indicators were developed in the early 1980s, and health bodies in Northern Ireland were part of the NHS performance indicator systems at that time. New Public Management was emerging at this time, and it was recognized that as some parts of the public sector were moving from direct provision to contracted provision there was a need for new systems of information for planning and control. Performance Management became more fashionable in the 1990s, with more complex needs for timely and accurate information. While there is only limited consensus about the best ways to go in terms of developing information to support management in the public sector, there is extensive experience to learn from.

Conceptual issues

This section draws heavily on the ideas set out by Goddard *et al* (1988) which remains one of the best summaries of the issues faced in developing performance frameworks. It takes account of the important social science issues of the unintended consequences of well intentioned actions.

What performance do we want to measure?

- What matters to the funders, users and providers?
- Given we cannot measure everything how do we best choose?

Measurement

- We need to recognize that all measurement is partial
- Fragmentation – with multiple payers in the provision of services, where does the fault lie? Put another way who owns the problem? Who owns the problem?
- Most indicators are short term, and may encourage the pursuit of short term goals to the detriment of longer term goals
- There are many different potential indicators – are the ones chosen the ones we want to measure?
- There is always a risk of misrepresentation in data that are provided, even when they are subject to audit and scrutiny. The reality is that providers of data always have the advantage over those requesting data
- Ossification is always a risk. Just as generals always fight the previous war, indicators tend to measure the previous targets, and may make it more difficult to innovate and change

An important insight relevant to measurement is what is known as Goodhart's Law. Formally, this states '*any observed statistical regularity will tend to collapse once pressure is placed upon it for control purposes*. In this case, if we monitor length of stay or day surgery rates, because they have been shown to be correlated with good performance we may find good performance on the targets, but no overall improvement in performance.

Analysis

Attribution of change to actions related to the data or indicators will always be difficult – to what extent does the organization's performance affect the indicator, and to what extent does change happen even without the indicator being in use?

There is an important problem in any use of index numbers and with aggregation of data. In a sense all aggregations of data lose some meaning and some data heterogeneity. Very simply, we gain more knowledge from the patterns of length of stay than the average length of stay, and differences in kurtosis can lead to misleading interpretation of standard measures of dispersion. As has been pointed out elegantly by Altman and Royson, categorizing data (as is frequently done in developing and using indicators systematically destroys much of the evidence (Altman and Royston, 2006).

Action

The problem of gaming will never go away. Related to gaming, we often find that an effect of something being measured is that something that is not measured gets worse. The follow up action can be collaborative or punitive? There is a strong link between the nature of the follow up action and the likely behavior of provider organizations and the ways in which data are made available. There remains an issue about the influence of making data available on changes in provider behavior. The extent to which organizations are persuaded or shamed into changed behavior depends on many and complex factors.

HealthStat

What is the key focus – is it a tool to alert HSE to problems or to monitor performance? It is hard to judge the scope and quality of the system without some greater clarity on the purpose and focus. The domains for targets are access, integration and resources. The question remains whether these are the most important ones, and do the indicators measure them well. One strength of HealthStat is that the domains were chosen by those who will use the data – this has the advantage that the system is perceived as relevant to its key users. The disadvantage is that the domains and indicators may not seem so relevant to other users, and their choice may not draw on some wider experience in developing systems elsewhere.

There are some issues in at least some of the targets. For example, with access and waiting times, how much of the poor performance is related to lack of resources and how much to local management? In any performance management system it is important to ensure that it is clear who owns the problems that are the focus of monitoring. The early evidence is of significant buy-in to HealthStat from hospitals, but this will be undermined if there are issues where the providers do not feel able to control important targets. They may raise issues such as:

- Hospitals are constrained by national constraints and agreements
- We want to do things differently, but indicators are too focused on process rather than effect and outcomes, and we feel we have to follow these targets
- Data are particularly poor on outpatient and other ambulatory services – these are a major focus but we have very crude ways of paying for them and poor data on activity and outcomes
- There is a temptation to measure what is measurable and not what we really want to measure

The Forum does provide formal mechanism for discussion and feedback, and this is critical if the aims of changing behavior are to be achieved. This also raises important issues – there is a need to keep the indicators simple, but in doing this we are likely to destroy some of the richness of the data, and risk over simplification. Put another way, do the traffic lights tell us more or less than the data from which they are derived? In part this will depend on how they are calibrated – how much variance from the target represents worrying or poor performance. Clearly, the percentage differences that matter are likely to be different for different indicators, but that can make the whole thing more complicated. At present, we do not have different weightings for the different indicators – logically they must be of differing importance, and again the trade-off is between better but more complicated systems.
The unambiguously good news from the development of HealthStat is that comparisons are being made, and we are seeing the removal of constraints to using comparative data to make comparisons. The first time comparisons are made there is always a tendency for those being judged to invoke Buxton's Principle - the correct time for any evaluation is last year or next year when there are better data. Data do get better, but we usually should not wait.

The Future of HealthStat and Performance Management
It has been made clear that the current version of HealthStat is work in progress, and there are plans both to widen its scope and to improve and develop the system. The system will be judged largely on its face validity – do the scores it generates seem reasonably, and do better performers do better? Or if we think of HealthStat as performance indicators, does it raise the alarm at the right times. There is a period of grace, but over time the providers of health care will want the answer to both these to be yes. There will be other factors that are important – for example, the degree to which hospitals and other provider organizations can meet certain targets will depend on resources, which are likely to be tightly constrained and financial constraints are likely to be more rigorously enforced in future. There are particular difficulties in using performance management systems when funding arrangements are historical and may not reflect accurately the costs of providing services.

In taking forward the development it will be important to remember that Goodhart's law will apply – hospitals will learn to do well in the indicators, and the targets will have to be modified from time to time. It is a safe bet that those being monitored are better at managing data than those doing the monitoring. The regulated normally have the advantage over the regulator. This does not imply that there will be deceitful and illegal behavior – it is just that there is always a tendency for indicators to become less useful over time as those involved get to understand them. It is also important to remember that what is not measured normally gets worse, and there are many aspects of the services that are not measured. We cannot escape the unintended consequences of efforts to improve performance. Together with Goodhart's Law this means that we need to ensure that the system is dynamic – gaming the system, the worsening performance of indicators and the risk of making the unmeasured worse are all reasons not to allow any performance management system to remain static. Equally, constant change can be harmful, and can make it hard to interpret change over time.

References and Notes

Goddard M, Mannion R and Smith PC. *The NHS Performance Framework: taking account of economic behaviour*. York Centre for Health Economics, Discussion Paper 158, 1998.
Goodhart, C. 'Monetary Relationships: A View from Threadneedle Street'. *Papers in Monetary Economics* (Reserve Bank of Australia), 1975.
Altman, D. and Royston, P. 'The cost of dichotomising continuous variables'. *BMJ*, 2006: vol. 332, p. 1080.
There is no single source for Buxton's Principle but it is attributed to Professor Martin Buxton of Brunel University.

SECOND VOTE OF THANKS PROPOSED BY DR EDMOND MOLLOY

There are two fundamental aspects to the challenge of improving the performance of any organisation. One is the technical challenge, for example, designing structures that are fit for purpose, streamlining core processes or, as in this case, creating a performance information and decision support system for hospitals. The second dimension of the challenge is to overcome the human, cultural and political obstacles to implementing the new structure, new business processes or new performance management system.

For some strange reason the technical aspects are usually referred to as the "hard" elements and the others as the "soft" stuff. Of course the converse is true. There are few greater perceived threats to the staff of any organisation that a system which scrutinises and measures their performance and furthermore, makes this information available to the public on a monthly basis. Consider, for example, how little progress has been made in installing a measurement system that would throw light on the performance of school teachers or schools as a whole. The PMDS system that was implemented right across the Public Service over the past five or six years only works as it was meant to work in a few areas because of a widespread resistance to committing to measurable targets.

So, the creation of HealthStat is a truly outstanding achievement. It is a tribute to the statistical and associated technical skills of the team but even more so to their social skills. In a piece or research conducted by Daniel Goleman author of the best-seller *Emotional Intelligence* and reported in the *Harvard Business Review*, Goleman found that the most successful scientists among the community of scientists in Bell Labs, the crème de la crème in other words, were distinguished by their superior social skills – what he called their Emotional Intelligence. The most successful scientists were those who could persuade others to fund their projects, they were adept at negotiating collaborative arrangements, they were good at building teams and eliciting exceptional effort from everyone involved.

For 30 years I have been involved as a consultant in numerous large scale organisational transformation projects in all sectors and none of these cases is remotely as complex and testing as the task of transforming the health system. How do you transform an organisation with 125,000 people, scores of professional groupings, each protective of their own particular interests and all dealing with life and death issues – under constant operational, media and political pressure?

Mark, Maureen Lynott and their team have achieved something quite remarkable in establishing HealthStat. It is testimony to their courage, sensitivity, tactical skill and integrity that they managed to win the trust of hospital managers and staff and secure their cooperation in creating, installing and using the HealthStat System.

Among the many far-reaching reforms already under way or in the pipeline in the health system – such as the introduction of clinicians into management, the integration of the three pillars, the reorientation towards Primary and Community Cares, I cannot think of any single reform that will ultimately have a more pervasive, beneficial impact than HealthStat.

In a large, complex, geographically dispersed organisation such as the health system you need managers to manage. The system cannot be run from a head office in Dublin. In my work for the HSE and in some hospitals over the past few years I have been struck by a curious pattern. People who are described to me as "tremendous managers" are in reality tremendous troubleshooters, tremendous fixers, tremendous crisis managers. I would define the job of a manager in two words: *continuous improvement*. The job of a hospital CEO, a nurse manager, a clinical lead, a financial controller is just that: *continuous improvement.* And to carry out this fundamental role they need a flow of accurate up-to-date information – which is HealthStat.

HealthStat is the single most vital piece of organisation infrastructure in that it enables the health system to be managed, to be improved. Without this information managers have no option but to be crisis handlers and fixers. So, many congratulations to Mark, Maureen and their team on a literally invaluable contribution to health system reform.

I would now like to enter a number of cautions and to offer a few suggestions about the further evolution of HealthStat.
At the launch of HealthStat to the media in Dr. Steevens a month ago there was a presentation on the use of HealthStat by the CEO of Waterford Regional Hospital. The CEO explained how she uses the information to understand the *causes* of certain patterns. What she was doing was discovering lead indicators or drivers and lag indicators or outcomes. She gave examples of how she used the intelligence produced by HealthStat to redeploy scarce resources to greater advantage.

Whether the Accountability Forum or some other unit does it, it is imperative that every effort is made to ensure that the Waterford application becomes the norm where the essential measurement architecture is maintained, while at the same time HealthStat indicators are used creatively as signposts to where you might drill down deeper to discover root causes or spot illuminating patterns in the data.
The opposite to the attitude demonstrated in the Waterford case is where the measurement system becomes a sterile, form-filling exercise which is dodged and resented. This is a real risk.

In the next stage of developing HealthStat, therefore, it will be as important to foster open, creative application as it will be to roll it out to more areas, such as community health and social care services. In any organisational transformation project *depth* of change, transformation of the cultural attitudes to measurement and scrutiny, is what ensures enduring beneficial change.

HealthStat shines a light into the functioning of hospitals and, as Mark mentioned, it is planned to bring this light to bear on community health and social services. I would urge that in setting priorities for the extension of HealthStat consideration be given to shining the light into the darkest areas of the health system where people are most vulnerable – in particular centres of care for the elderly and centres of care for people with mental illness.

A third suggestion relates to the level of information provided by HealthStat, which is essentially operational information about length of stay in hospital, staff ratios, absenteeism and so forth. This information can be aggregated up to produce a national, total system view of operational improvement. In addition to this kind of information we also need a publicly accessible information system which measures *strategic* progress that is progress on major reform initiatives which typically take a longer time to show progress and impact. Today we get this kind of information from Prof. Tom Keane on the implementation of the Cancer Strategy. We don't have this transparent, regular reporting of progress against plan for many major health service initiatives. I would mention in particular *Vision for Change*, the strategy for mental health services published in 2005. Where is the implementation plan and where can I find out what progress is being made? There are many other major transformation programmes, for which we need a measurement and reporting system.

In conclusion, there are many different ways to crystallise what has happened in Ireland, the catastrophic collapse of public finances, the bankruptcy of our banks – and all the awful consequences. But one simple way to explain it all is as a *failure in our systems of accountability, our systems of governance*. In this context HealthStat will hopefully inspire and inform the wider Public Service in particular to develop the measurement and information systems that are the essential underpinning of a system of accountability. Imagine, just for example, if we had a Local Government Stat which measured quality of drinking water, waste management, responsiveness of the fire service and provision of other local services. The newspapers reported a few weeks ago that 270 local government managers applied for performance-related bonuses and that all 270 were awarded a bonus. For which performance, I ask?

HealthStat shows what can and must be done to build a culture of accountability in our Public Service – and beyond.