Occasional articles

WELCAN UK: Its development and future

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Introduction

For any organisation the measurement of work performed provides information about output and is regarded as essential datum for effective management. Workload measurement indicates what is being produced and forms a critical part of the total information necessary for planning, programming, budgeting, monitoring and staffing an organisation.

Within the National Health Service the Griffiths report¹ highlighted the scope for improving efficiency, and central to that philosophy lies the need to provide timely management information, but it is vital that such information is reliable. Sadly, attempts in the United Kingdom over the past 40 years to achieve a scientific approach to the problem of workload measurement in pathology have largely been unsuccessful.

Historical background

The attempted quantitation of work undertaken in United Kingdom pathology laboratories has its origins in the Emergency Medical Service (EMS) of the Second World War and beyond. A time based workload unit devised for EMS laboratories was in use until 1949, when, following the advent of the National Health Service, the "specimen" count was adopted as the unit of measurement. In 1952 the Ministry of Health published a schedule of unit values,² based on a joint study by the Central Pathology Committee and the Nuffield Provincial Hospital Trust. Implemented with the issue of HMC(52)117,³ that unit scheme replaced the "specimen" count and remained in force until 1957.

Criticism of such unit values led to further studies by the Nuffield Trust, and following discussion with the Central Pathology Committee, the issue of HM(57)95⁴ introduced the concept of the "request" count as a measure of pathology workload.

Following adoption of the request count in 1963, the Hospital Organisation and Methods Unit of the Ministry of Health investigated its usage and proposed the adoption of 'weighting factors.' The results of this work, published as Hospital O and M Service Report No 6, entitled *Pathology—Measurement of Work in Units*,⁵ provided data on unit costing for management purposes. Publication in 1967 of the complementary Hospital O and M Service Report No 10, *Pathology—Organisation Management and Methods*,⁶ aimed to provide guidelines for laboratory management to assist in ensuring effective utilisation of resources.

From their inception the use of "weighted" requests was subject to progressive criticism, and with rapid changes occurring in the practice of laboratory medicine from the 1970s onwards, the value of "weighted" requests as a measure of workload was universally challenged.

This revolt led, in 1974, to the Central Management Services Branch of the DHSS undertaking a study to identify a new system of workload measurement that would be valid and acceptable for National Health Service purposes. Following a pilot scheme, an extended study based on the use of the Canadian Workload System⁷ involving nine regional health authorities in England and Wales was undertaken. Central Management Services published the findings of this study in 1978 as CMS 179/8,⁸ though the document received only restricted circulation.

The Canadian Workload Measurement System (CWMS)

The Canadian government system stems basically from the old EMS unit of the 1940s, and has been operational since publication of the first schedule in 1969. It is regularly updated, the most recent edition being published in 1989.⁹ A similar schedule is published by the College of American Pathologists,¹⁰ and strong rapport exists between both North American organisations.

Central to the CWMS is the unit value, based on quantitation of productive activity, one unit being equal to one minute of "productive time", involving technical, clerical, and aide staff. "Waiting time" is excluded from unit values. A "procedure" defines an activity listed in the schedule and consists of a sequence of steps which may be summarised as follows: (1) initial handling; (2) specimen testing; (3) recording and reporting; (4) daily or routine preparation; (5) maintenance and repairs; (6) solution preparation; (7) glassware cleaning; and (8) technical supervision.

Unit values are constructed from timing studies carried out for each step in the procedure, and a published unit value encompasses the total time taken to complete a given procedure once—that is, from specimen receipt to issue of report. The system provides for the inclusion of unit values for both manual and automated procedures, and local profiles may be established where several procedures are commonly used in the production of a single laboratory report. For example, a routine urine examination may require (a) dipstick urinalysis = 4 units + (b)

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microscopy = 2 units + (c) culture = 3 units; therefore the total for this routine urine profile = 9 units.

An activity pivotal to the system is the creation at each work station of a user procedure file. This file provides for the listing of all procedures commonly undertaken at that particular station, including locally determined profiles. It is subject to regular review and forms an essential reference source for audit activities.

Overall, published unit values reflect mean values based on timing studies derived from a range of laboratories, and are subject to regular review. Procedures not listed in the CWMS Manual are subject to an application for temporary (T) unit values, which are then subject to validation by specialist committees via a national secretariat having operational responsibility for the management of CWMS. Values are assigned after a sufficient number of studies at several sites.

The Canadian Workload Measurement System makes no specific provision for the measurement of "other activity" or "non-unit producing activity," such as teaching, training, administration or research, but indicates how to record such activities. Likewise, the activities of medical and senior scientific staff are excluded from analysis, though they are considered in the context of total laboratory budgets.

The Welsh experience—1986 onwards

BACKGROUND

Comment on the well structured advisory machinery for pathology in Wales is important as it greatly facilitated the workload measurement studies undertaken in the principality. Briefly, the Welsh Scientific Advisory Committee (WSAC) provides advice on laboratory services to the Secretary of State through the office of the chief scientific adviser, Welsh Office. The Laboratory Services Sub-Committee (LSSC), through its membership on the WSAC, provides the necessary information. The LSSC, in turn, receives detailed specialist advice via the four Standing Specialist Advisory Groups (SSAGs) representing clinical chemistry, haematology and blood transfusion, histopathology/cytology and medical microbiology.

Arising from the 1982 publication of the first report¹¹ of the NHS/DHSS Steering Group on Health Services Information, chaired by Mrs Edith Körner, the four SSAGs in Wales (among others) expressed concern that the Körner Group had recommended the retention of the long discredited "request" count as a measure of pathology workload, and suggested that a system based on the Canadian Workload Measurement System could be explored. As a result, small working groups drawn from the SSAGs, using the 1986/87 edition of the CWMS Manual and Schedule supplemented with revised local timing studies, created the first Welsh Workload Measurement System (WWMS) for pathology. The *Manual with Schedule of Unit Values*¹² was published by the Welsh Office in 1987.

Some preliminary studies using the WWMS Manual indicated considerable local support for the system as a viable alternative to the Körner "request" count. Following on from these studies, background information and workload measurement options were detailed in a commissioned Report on Performance Indicators in Pathology¹³ presented to the Management Information Steering Group (MISG) chaired by the Director of the NHS in Wales. The MISG endorsed the recommendation contained in the Report to adopt a Welsh version of the Canadian Workload Measurement System in lieu of the "request" count, and subsequently the idea was adopted by the Laboratory Services Sub-Committee and accepted by the WSAC with a remit for the LSSC to conduct an all Wales pilot study of the system during 1987. That study sought to assess the validity of proposed unit values, the practical application of the system, and any associated problems.

ALL WALES PILOT STUDY 1987–1988

In preparation for the study, an all Wales workshop for laboratory staff was held at Llandridnod Wells in March 1987 when manuals were distributed and the basis of the Welsh system was outlined. The meeting was attended by representatives of all Welsh laboratories, together with visitors from outside Wales, including some observers from the Royal College of Pathologists and the Association of Clinical Pathologists. Attention was drawn to a similar study being undertaken by a multidisciplinary working party from the South Western Regional Health Authority who were also evaluating a local version of the Canadian unit system.¹⁴

All laboratories in the Principality participated in the study which was monitored by an Executive Group drawn from the LSSC, and the study was carried out in two phases, each of three months duration, April–June and October–December 1987. Departments were requested to collect both the current SBH6 data (weighted requests) and Welsh unit values, the latter being recorded in the recommended Körner data sets. Although the response to this detailed data collection was incomplete in the first phase of the study, collection improved with the second phase, though some participants were only able to collect data on a sampling basis.

Briefly, the published unit values were found to be acceptable, and encouragingly, were consistent with those in use in the South Western Region. Limited operational indicator studies (Performance Indicators) highlighted the need to examine serious deficiencies in quality of both budgetary and personnel data. Overwhelming support for the use of the WWMS was apparent, but there were problems relating to data collection. (The latter initially appeared directly related to the absence of computer facilities in laboratories and as an interim measure, a specially commissioned PSION organiser based system (PWS) (Altam Medical Systems, Belper, Derbyshire), aimed at easing the data collection problem, was provided to

non-computerised departments.) The findings were discussed by the Executive Group, and following endorsement by the LSSC, the Welsh Scientific Advisory Committee agreed to adopt the Welsh Workload Measurement System for the collection of workload data in place of the Körner "request" count.

There was clearly scope to revise unit values in the schedule, so it was further agreed that material for a revised edition of the Manual be prepared by Executive Group. As a result a new edition of the workload manual and schedule was published by the Welsh Office in 1988 under the title of WELCAN.¹⁵

ALL WALES PROFESSIONAL AUDIT 1989-90

Following the adoption of the WELCAN unit for the measurement of pathology workload in Wales, the WELCAN Executive Group, on behalf of the LSSC, initiated a primary audit of the system, designed to monitor the operation of WELCAN and to ensure its continuing credibility. This first audit sought not to censure users but to promote confidence in the system.

As a preliminary, a postal survey was undertaken, mainly to elicit answers to the problems of data collection underlined in the Pilot Study. The responses received indicated that the problems of data collection, especially on a continuous basis, were not being fully tackled. The PSION package, while helpful, was not ideal, though where laboratory computer systems were in place, problems of collection were minimal.

For the actual audit itself, eight pairs of auditors (a consultant and an MLSO) appointed from each of the SSAGs, visited all their respective discipline laboratories in the Principality. Heads of departments were contacted before visits and auditors used questionnaires of their own devising.

In general, visitors were well received, and the opportunity to discuss problems was greatly appreciated. Lack of feedback, lack of facilities for data collection, and some ambiguities in the Schedule were among the deficiencies identified. On the positive side, the use by some departments of WELCAN data for management purposes was encouraging, and there was considerable support for a further update of the Manual and Schedule, with a more "benchproof" presentation. There was universal approval for an annual audit, but with visitors using a standard approach and an agreed common questionnaire.

External liaison

Since the Laboratory Services Sub-Committee in Wales began consideration of laboratory workload measurement options in 1986 contact has been maintained with the body responsible for the original Canadian Workload Measurement System on which WELCAN is based. Liaison has also been maintained with the South Western Regional Health Authority's Working Group and contacts have been made with the Northern Ireland Office, laboratories in Eire, Saudi Arabia, Australia,

Tasmania, Spain and the Channel Islands, as well as many individual departments throughout the United Kingdom.

Most importantly, a link with the Royal College of Pathologists/Association of Clinical Pathologists Joint Working Party on Performance Indicators has resulted in a countrywide United Kingdom review of unit values, culminating in the production of a 1990-91 version of the WELCAN Manual and Schedule. Published by the Welsh Office and now titled WELCAN UK¹⁶ the Manual is presented in loose-leaf format with "bench-proof" binder. Provision is made for user registration to facilitate distribution of amendments to the text and the future updating of unit values. The Manual contains a new approach to the calculation of prospective unit values and the Schedule now provides separate entries in the fields of cytogenetics and immunology.

The future

Four years of field experience by the pathology services in Wales and the South Western Region in England, together with the support of the Royal College of Pathologists/ACP Joint Working Party, suggest that WELCAN UK offers a credible approach to the measurement of pathology workload. Such a facility is timely as the Health Service lumbers into a market environment. WELCAN UK should appeal to laboratory personnel because its development has been professionally led since inception.

Studies to date have been largely concerned with establishing the validity of unit values, and experience indicates the need for their regular reappraisal, together with an independent audit of data collection at departmental level. Both these monitoring processes are essential if the credibility of WELCAN UK is to be maintained.

User experience indicates the need to provide effective information systems to collect WELCAN data. Accurate and timely information on staffing and expenditure are also essential if effective operational indicators (PIs) for laboratory management are to be produced.

There will be a long term requirement to develop a national control system for WELCAN UK, to maintain and revise the Schedule, and provide support and guidance to users.

The involvement of all laboratory staff in Wales and the commitment by members of the Laboratory Services Sub-Committee, who provided the source material on which this Report is based, is gratefully acknowledged. Thanks are due to those individuals and official bodies, especially the Royal College of Pathologists/ACP Joint Working Party, who collaborated in the extensive work which culminated in the publication of WELCAN UK 1990.

Members of the WELCAN Executive Group

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