Costing in the Newcastle Infirmary, 1840-1888

Structured Abstract

Purpose – This paper examines the nature and function of cost accounting at the Newcastle Infirmary, a large voluntary provincial hospital, established in 1751. In particular, the paper adds to the literature on accounting within early voluntary hospitals by identifying the relative contribution of the costing system to planning and controlling the operations, assisting decision-making and holding managers accountable for their performance.

Design/methodology/approach – The paper relies primarily on original documents preserved in the archives of the Newcastle Infirmary.

Findings - Although evidence was found of sophisticated costing procedures, the findings suggest that the majority of the information was produced *ex post* by the hospital management to demonstrate good stewardship and to engender financial support.

Research limitations/implications – More cases are needed of other hospitals to ascertain how typical the Newcastle Infirmary was of the voluntary hospital sector in the 19th century.

Originality/value – Although there are other studies of accounting within British voluntary hospitals, and studies of the use of accounting to drive decision-making in profit-making organisations during the 19th century, none have investigated the use of accounting as a decision-making tool in a voluntary hospital.

Keywords- Hospitals, Accountability, Morality, Poor, Nineteenth century, Newcastle, Costing, Decision-making

Article Classification - Research paper

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Introduction

This paper examines the nature and function of cost accounting used by management at the charitable Infirmary for the Sick and Lame Poor of the Counties of Newcastle-upon-Tyne, Durham, and Northumberland (hereafter the Newcastle Infirmary) c.1840-1888. The Newcastle Infirmary was one of many provincial hospitals established throughout Britain during the mid-18th and early 19th centuries by contributions from wealthy members of the local community, hence their description as "voluntary" hospitals. Voluntary hospitals were originally intended for patients who could not afford to pay for their treatment, although there were usually severe moral qualifications attached to eligibility which were consistent with prevailing Victorian beliefs that the poor were either "deserving" or "undeserving" of help (Holden *et al.*, 2009). The voluntary hospitals were established with strict rules to treat only the "deserving" poor, those who wanted and were able to work, as opposed to the feckless and therefore "undeserving" poor, for whom possibly the best option was the workhouse infirmaries. The Statutes and Rules of the Newcastle Infirmary in 1801 stipulated that:

> The express design of the Infirmary is to afford relief to the indigent sick, who cannot be treated with success at their own homes (TWAS: HO/RVI/74/2).

The population in Newcastle, like many other provincial British cities in the second half of the 19th century, expanded rapidly, placing severe pressure on the Newcastle Infirmary's resources. Holden *et al*. (2009) found that with "employment in the north east of England in the 19th century particularly hazardous and serious accidents common, the Infirmary quickly became a specialist centre for surgery." With growing demand for its services, and reliance solely on voluntary subscriptions and philanthropic donations, the

management of the Infirmary had to ensure they managed costs and that decisions were taken that would not overstretch the available finances. Hence, the potentially critical importance of cost accounts in controlling expenditure and in obtaining value-for-money.

However, rather than cost information driving the decision-making activities of the Newcastle Infirmary this study establishes that its primary use was to monitor and provide justification for decisions already taken. In the case of operating expenses, the paper does find cases where the hospital management were able to take reactive decisions over future expenditure on the basis of historical cost analyses. The situation was different for capital projects. As the paper describes, when considering new extensions such as the Dobson Wing, or new medical treatments such as the introduction of antiseptics, accounting was primarily visible after the decision had been reached to report the financial impact and benefits achieved, rather than before to inform the decision under consideration. Costing information at the Newcastle Infirmary was produced first and foremost to demonstrate that the management, who were unpaid governors subscribing at least two guineas a year, had fulfilled their social obligations to the subscribers and other benefactors in providing effective treatment for the "deserving" poor of the region rather than to inform investment decisions. As a charitable institution, accounting for costs was used to reinforce this message of moral rectitude. For the governors there was a selfish motive too, in that although unpaid, the role of governor accorded them significant social status. Hence, anyone occupying these roles could not afford to be seen wasting the resources at their disposal. The effect on business reputation was another consideration in view of the closely integrated nature of the local business community at that time (see Lendrum 2012).

Evidence has been gathered from the annual reports of the Newcastle Infirmary, records analysing income and expenditure kept from the Infirmary's foundation in 1751, and the minutes of the Infirmary's main committees, the House Committee, Medical Committee,

and Special Finance Committee, most of which are preserved within the Newcastle University Library (NUL) and Tyne and Wear Archive Service (TWAS). The hospital's statutes and regulations and building reports were also examined. The Newcastle Infirmary kept many volumes of detailed records relating to the workings of its various committees, the vast majority of which still survive today. Records relating to the hospital's success in treating patients such as the average length of stay, number of patients treated and death-rates were regularly published in the annual reports. In addition, and exceptionally for the time, a great deal of costing information was also published in these reports, such as cost per bed and cost per patient. The annual reports of a voluntary hospital played a pivotal role in its marketing and communicating to current and potential subscribers, as well as to other voluntary hospitals. However, there were no statutory requirements regarding what should or should not be published in these reports. As a result, the annual reports were used as a means of conveying the prior year's performance as well as highlighting future issues and plans, all of which potentially could have significant financial implications for the subscribers and other benefactors. From its very beginnings, the books of account of the Infirmary were to "lie constantly open for inspection" (1751 Annual Report). As a result, anyone including non-subscribers could access the accounting records if desired.

The paper continues by firstly identifying recent contributions to understanding the role of accounting in hospitals and the absence of a strong costing culture in early hospitals despite the advanced state of cost accounting many 19th century industries. An overview is then presented of the funding arrangements of the Newcastle Infirmary, its management structure and lines of reporting, before turning to the cost accounts themselves which are considered under two key headings: operational costing and capital projects. The operational costing used in the day-to-day management of the Infirmary is examined by investigating the accounting records kept, the controls in place and the key performance indicators being

published. The large capital projects undertaken during the period are then scrutinised to determine the degree to which financial considerations influenced these decisions and, thus, the nature of the accounting information used. In this respect, the extent to which costing information was produced and used ex ante as opposed to ex post is particularly relevant. By definition, ex ante information would have been available to inform the investment decision under review as it would have been prepared before the event, in contrast to information relating to the project produced ex post that would not have been accessible until afterwards.

Hospitals and the rise of cost accounting

Hospitals in the modern era have attracted the attention of accounting researchers not only because of the vast resources that they consume but, possibly more importantly, they present the most challenging problems for government when evaluating performance (Birch and Maynard 2006). Unlike many public and private sector services, for example the building and management of roads, hospitals involve the provision of services that have the greatest impact on the well-being of large numbers of the population and, therefore, the source of greatest political exposure to governments should services not be delivered efficiently and effectively. While the public might recognise that matters of finance must be major considerations when managing hospitals, rarely are they prepared to prioritise finance ahead of the alleviation of suffering. A significant part of the efforts of critical accounting researchers with a public sector emphasis has been directed at the National Health Service (NHS) and the management of its hospitals (Broadbent et al 1991; Laughlin and Broadbent 1996; Froud and Shaoul 2001; Broadbent and Laughlin 2002; Broadbent et al 2003). Critical accounting researchers have been especially prominent in their examination of the ways in which accounting, and the managerial values and emphases that it promotes, has been used in the public sector as a key element of the New Public Management (NPM) to supplant

previous administrative understandings of accounting and performance measures. Critical accounting scholars have exposed, across myriad government agencies and services, how accounting has been essential in the institutionalisation of a new regime of public sector values, most especially those which result in measurable, auditable and reportable performance, and the social consequences of these changes (Power 1997; Funnell et al 2009).

However, the idea of holding hospital managers to account by measuring performance is not unique to the 20th and 21st centuries. Indeed, this was one of the main drivers behind the costing records at the Newcastle Infirmary in the mid-to-late-19th century. While there have been many histories of British hospitals (for example see Anning 1963; Eade 1900; Haliburton-Hume 1906; Hall *et al* 1987; Harris 1922; Jacob 1951; Robb-Smith 1970), studies of the history of accounting in hospitals have been very limited (see for example Cherry 1972,1980,1992,1996; Jones and Mellett 2007; Berry 1997). Robson (2003, 2006) examined the development of departmental accounting and the spread of uniform accounts within voluntary hospitals at the turn of the 20th century. Most recently Jackson (2012) has focused on how the Edinburgh Royal Infirmary used their annual accounts to raise subscriptions by listing subscribers not alphabetically but geographically, thereby allowing each contributor to examine his own contribution against that of his neighbour. Most importantly, placing this information in the public domain also exposed to public disapprobation those subscribers who had not honoured their commitment and were in arrears.

The present paper compliments a previous study of the Newcastle Infirmary that examined the hospital's external accounting arrangements in the same period (Holden *et al.*, 2009). Whereas the concern of the present study is the extent to which the accounting practices of the Infirmary were used to plan and control the operations and aid decisions, the earlier study examined how the deployment of accounting information either reflected or challenged pervading social beliefs relating to the poor. It identified how those managing the

Infirmary used the annual reports as a tool to echo and reinforce the pervading moral attitudes of the day. Most especially, the annual reports emphasised "self-help", or the need to restore to health those who were capable of working, as the qualification for assistance in order to raise the necessary money from subscribers and benefactors. At the same time, the reports were unexpectedly found to have challenged these self-same social and moral beliefs to enable the hospital to fulfil its religious and humanitarian mission of providing assistance to the poor as a whole, the so-called "deserving" and "undeserving" alike.

The current study augments our knowledge of the contribution of accounting to enhancing managerial effectiveness in the 18th and 19th centuries, and in particular as an aid to management decision-making, by broadening the focus of interest from the industrial firms that have preoccupied accounting historians to the not-for-profit sector. During this period, commercial organisations, particularly those in capital intensive industries such as iron and steel or engineering, were developing costing systems to better understand the determinants of profit, the allocation of overheads and the key factors in decision-making. Jones (1985, pp. 168-171), for example, demonstrated that the Mona Mine Company was using an imputed interest charge to take account of the opportunity cost of the working capital when determining the profitability of a particular activity as early as 1800. By 1870 a relatively sophisticated form of overhead apportionment based on a level of throughput was in operation at the Staveley Colliery (Boyns and Edwards 1997). Standards were being used by Boulton & Watt for control and planning decisions including setting piece-rates by 1800 (Fleischman et al., 1995), and to judge the efficiency of coal consumption in a copper smelting company, Vivian & Sons at Hafod in the 1840s (Edwards and Newell, 1991). Costing was employed to determine selling price at the Wedgwood Company (Fleischman and Tyson 1993). Jones (1985, pp. 110-111) found evidence of budgeting in the Dowlais Iron

Company in the early 19th century where accounting also informed the strategic decision-making process during the 1850s and 1860s (Boyns and Edwards 1997).

Based on an appraisal of some two hundred industrial enterprises mainly in the iron, textiles and coal sectors Fleischman and Parker (1997, p. 47) concluded that "the comprehensiveness and variety of cost management practices during the British Industrial Revolution attest to their high priority with industrial entrepreneurs". In particular, industrialists used cost accounting "to aid them in decisions involving the procuring, tracking, and comparing of their technological investments" (pp. 234-5). Boyns and Edwards (2013, p. 279) saw the industrial revolution as a period of continuing evolution in which businessmen devised practical costing solutions to provide them with the information they needed "for both routine issues, such as price fixing, contract tendering and monitoring/control purposes, as well as for more strategic decision making purposes". Despite the consistency of these studies regarding the significance of costing to decision-making in the industrial revolution, dissenting voices remain over how effective an aid it proved in practice, and indeed whether the costing calculations that have been interpreted by historians as designed to aid decisions were really intended to serve that purpose by the owners (Fleischman and Parker, 1997, p. 8; Miller and Napier 1993; Hoskin and Macve 2000). Bryer (2005), for example, argues that the Economic Rationalist School is mistaken to attribute decision-usefulness as a motive to cost accounts in this era when their true purpose was to align the mentality of the managers with that of the owners by providing the means by which the managers could be held accountable. This particular issue is relevant to the Newcastle Infirmary where accountability was the prime motivator of the costing procedures rather than decision-making.

Funding and managing the Newcastle Infirmary

The revenue of voluntary hospitals came predominately from annual subscriptions made by socially prominent, wealthy members of the community as well as by employers, trade unions and town councils (McCord 1974, p.97; Woodward 1974, p.38). The subscription income was supplemented by legacies and bequests, one-off donations, interest on investments, poor-box donations and special fund-raising events such as dinners, sermons, benefit plays and concerts. During the period under review each subscription of one guinea to the Newcastle Infirmary entitled the subscriber to recommend one outpatient per year for treatment and two guineas provided for two outpatients or one inpatient per year. For any amount subscribed over two guineas, these ratios remained constant (NUL, Hospital Archives, 72 - Annual Report 1850, p.27; Annual Report 1867, p.3; NUL, Hospital Archives, 45 -Statutes and Rules 1855). Patients seeking to be admitted to the hospital would present a letter of introduction, obtained from a subscriber, to the House Committee. This helped to ensure that only eligible "objects" of the charity, the indigent poor were considered for admission to the Infirmary. Towards the end of the 19th century this letter system of admittance was abandoned by voluntary hospitals to be replaced by a free for all system, funded by small weekly worker subscriptions in addition to the existing large annual subscriptions made by the social elite and corporations. The Newcastle Infirmary itself became free to all in 1888. At the same time, the Infirmary was exposed to significant changes in both medical practice and local demographics that were to place ever greater demands on its facilities, services provided and management system.

The latter decades of the 19th century saw considerable improvements in medical treatment with the introduction of anaesthetics, antiseptics and Florence Nightingale's revolutionary advances in nursing care. Anaesthetics and antiseptics enabled more operations to be undertaken and forced the Infirmary to consider increased staffing levels to cope with

the increased demand. The cost of surgical instruments and chemicals, such as ether, chloroform and carbolic acid also rose. As a result, there was a significant change in the type of costs incurred by the Infirmary during this period. Prior to the introduction of anaesthetics and antiseptics, the major costs were victuals. Innovative patient care placed additional strains on the Infirmary's capacity to treat those in need. In 1859 Florence Nightingale published her *Notes on Nursing: What Nursing is and What Nursing is Not*, which sold over 15,000 copies in the first two months (Lane 2009). Its teachings on ventilation, light, patient diet, overcrowding and the use of professionally trained nurses, as opposed to patients nursing other patients, all had financial implications if they were to be introduced by the Infirmary. In addition, the City of Newcastle was a thriving port and industrial hub, attracting migrant and immigrant workers with the prospect of work in the booming industries of shipbuilding, coal, iron and steel, railways, engineering, armaments and chemicals. This influx of workers created a large increase in the population of the city with the result that sanitary conditions failed to keep pace with the growing populace resulting in outbreaks of cholera, most notably in 1848 and 1853. These developments were to have major implications for the services demanded from the Newcastle Infirmary and how it was to be managed.

While each infirmary throughout Britain in the 19th century had its own rules and regulations, management practices and principles were remarkably similar. This reflected the preparedness of voluntary hospitals throughout England and Wales to share their experiences and knowledge (see Berry 1997, p.2). Anning (1963, p.56), for example, has shown how the Leeds Infirmary borrowed its manual of regulations from the Manchester Infirmary. Later, a deputation of the Building Committee from the Newcastle Infirmary was sent in 1852 to visit other hospitals to ascertain good practice ahead of drawing up plans for the construction of a new building, the Dobson Wing. The tour of inspection covered Manchester, Liverpool,

Birmingham, and London. In addition the architect "inspected and made a plan of the new hospital in Brussels" (NUL, Hospital Archives, 72, Deputation Report, 1852). All underlying principles of governance, management and day-to-day operation of the Newcastle Infirmary were set out in the Statutes and Rules of the Infirmary. First set down in 1751, these were not changed until 1801 and thereafter updated more regularly. The 1801 Statutes and Rules (Section 3, page 15) emphasised that:

> There must be a regular system of management. And this must depend upon the personal attention of the governors to the general interests of the charity. This will be found necessary, not only to check every irregularity in the patients, and to animate the exertion of every department; but also to prevent the funds from being improvidently wasted. Individuals, nay all the stated officers of the house, may perform their respective duties, yet as a whole the charity will not produce its full effects without a respectable attendance at the quarterly courts, a proper attention of the weekly visitors, and the constant exertions of a vigilant and active committee. (NUL, Hospital Archives, 43)

This "regular system of management" was provided by the Board of Governors and delegated to the House Committee and from there to the staff, most notably the House Surgeon, Matron, Secretary and Treasurer. The Governors, as prominent financiers of the Infirmary, would be invited and encouraged to attend the quarterly courts, the main forum at which the operation and needs of the Infirmary were discussed, as well as to become members of specific committees. They were also expected to take their turn as a weekly visitor, walking the wards and reporting any concerns to the weekly meeting of the House Committee. The quarterly courts allowed the Governors the opportunity to "receive the reports of the House Committee, to inspect the accounts, and to transact such other business as shall be brought before the Court" (NUL, Hospital Archives, 72, Annual Report 1867, p. 4; Statutes, Rules and Orders 1751, p. 3). During the period under review, the House Committee consisted of 12 Governors, which met every week to manage the operational issues regarding admittance and discharge of patients; hiring and discipline of staff; receiving and acting upon

the verbal reports of the weekly Visitors; recording income and chasing late payment. The House Committee was also responsible for overseeing the recording and approval of expenses. As charities, voluntary hospitals were expected to keep accurate and detailed accounts to allow their stewardship to be vouchsafed. At each quarterly court the Treasurer was to give a report on the level of subscriptions, legacies, benefactions and any other sums received in the quarter (TWAS, HO/RVI/74/2 - Statutes and Rules 1801, Rules for the Treasurer). Throughout the period of study the Infirmary employed a Secretary assisted by a Treasurer. The latter was to be a Governor performing his duty in an unpaid capacity. The Secretary was responsible for maintaining accounts until 1883, when it devolved to an appointed accountant (NUL, Hospital Archives, 47 - Statutes and Rules 1883, General Rules, Section XXIII).[1]

The House Surgeon was required to enter the wards every morning to enquire as to the state of health of the patients, to provide and prepare drugs and chemical preparations as directed by the physicians and note any effect they had on the patients. In effect the House Surgeon was an administrative apothecary. He was a paid resident in contrast to the unpaid honorary physicians. The efficacy of treatment was reported back to the physicians while an account of the expense of the drugs and chemical preparations was delivered to the House Committee. In addition, the House Surgeon was required to report to the House Committee on the first Thursday of every month the names of all patients who had been in the house for more than two months. Any stay longer than two months was regarded as *prima facie* indication that the patient had been wrongly admitted and, in addition, was probably unlikely to be restored to health.

The Matron was responsible for the care of all household goods and furniture, the quality and quantity of provisions, the cleanliness of the wards and the conduct of the nurses

[1] The Infirmary first employed an accountant in 1859, but given his salary was only £10 compared to £42 for the Secretary (1860 Annual Report) it would seem that the accountant at first worked in a part-time manner for the Infirmary.

and servants. She was required to keep a daily account of all provisions and necessaries used and to provide this account to the House Committee at its regular Thursday meetings (see for example *Rules to be Observed by the Matron*, Statutes, Rules and Orders 1751). In particular, Rule 64 of the 1801 Statutes and Rules stated that:

> She shall carefully superintend the management of the infirmary in every particular in her department and see that it be conducted with the greatest regularity and economy. (TWAS, HO/RVI/74/2)

Statute XXI, introduced in 1801, required a committee of three governors, appointed at the quarterly court in April, to draw up the annual report of the Infirmary which was to include an "abstract of the accounts". No further details are given as to what this abstract should contain, although the early 19th century ones consist of a rudimentary income and expense account. The requirement of the House Surgeon and Matron to report the expenditure on drugs, provisions and other necessaries and for the Treasurer to report income provided the information needed to prepare these basic financial statements. By the mid-19th century there was more analysis of larger items of expenditure but essentially little had changed. Not until the end of the 19th century did the accounts include a balance sheet as well as a version of Sir Henry Burdett's "uniform system of accounts - 1893".[2]

Annual reports traditionally had four main sections: the annual accounts and report on performance; an appeal for funding; a list of subscribers not in arrears with the amounts paid; and the types and numbers of patients treated and their outcomes (Berry 1997, p.4). Figure 1 below shows a page from the abbreviated accounts of the Infirmary in the 1850 Annual Report.

[2] The uniform system of accounts was devised by Sir Henry Burdett and adopted by many voluntary hospitals from 1893 onwards. It formalised the presentation of accounting information to allow easy comparison to be made between institutions. Some of the larger charities, such as the Sunday Fund, King's Fund and Saturday Fund, insisted that hospitals adopt the system as a precondition for grant applications.

INSERT FIGURE 1 ABOUT HERE

As can be seen from Figure 1, expenditure was listed and totalled under summary headings. During the first 100 years of operation the number of categories of expenditure increased gradually from 20 to the mid-30s by 1850. There are 35 in Figure 1. Thereafter, the numbers accelerated with over 50 categories of expenditure included in the 1880's, reflecting the expansion in the scope of the hospital's activities occurring during the timeframe of this study. It is also evident from the inclusion of one-and-a-half years' salary for the matron in Figure 1 that the accounts were prepared on a cash rather than accruals basis.

Whilst it was a rule of the institution that "no person should take any fee, reward or gratuity directly or indirectly for any service done" (Statutes and Rules 1801), the resident staff, that is House Surgeon, nurses and general servants, were excluded from this rule. As the scale of the management task increased with the expansion of the Infirmary's capacity, the number of paid senior officers also increased, some of whom were employed on a full-time basis. The most notable case in the period of study is Mr R. R. Redmayne who was appointed at an annual salary of £300 as "House Governor" in 1883. He had supreme authority in the Infirmary. All paid officers reported to him and he was responsible for all aspects of the Infirmary, reporting to the quarterly Board of Governors.

For much of the 19th century it was unusual for doctors and physicians in voluntary hospitals to have any significant role in decision-making. In 1873 *The Lancet* warned that by concentrating financial control and hospital administration in the same non-medical hands, and excluding doctors from management, "expenditure was screwed down in the wrong place at the wrong time" (quoted in Rivett 1986, p.14). However, as doctors attending patients in

voluntary hospitals began to charge for services and as teaching became increasingly important to the prestige and success of hospitals, doctors began to be allowed a greater say in the financial and clinical management of hospitals (Harris 2004, p.96; Berridge 1990, pp. 206, 208). The Newcastle Infirmary became very prestigious in the latter half of the 19th century both as a teaching hospital and as a place of surgical excellence, having pioneered the use of chloroform and other anaesthetics in operations. After some delay, in the early 1860s a Medical Committee at Newcastle evolved under the chair of the House Surgeon and reported to the House Committee. Although there had always been a Medical Board composed mostly of doctors who worked in an honorary capacity, it was not until the latter half of the 19th century that the demand for medical services required a committee to manage a significant number of full time medical staff. The formation of a Medical Committee had also been prompted, in part, by the Medical Act of 1858 which had introduced more formalised requirements for medical training and supervision. Also at this time dramatic improvements in anaesthetics and understanding of antiseptics which allowed greater success in a wider range of medical interventions had contributed to a marked rise in the demand for medical services and staff which were now appointed as paid employees of the Infirmary.

Operational costing

By the very nature of the services provided by hospitals, the range of conditions, their susceptibility to treatment and the treatments on offer, it is easier to pronounce upon economy than to assess the effectiveness of hospital management. At the Newcastle Infirmary managerial effectiveness was assessed in two ways. The first criterion was the number of patients restored to health and useful employment, consistent with the hospital's express mission since its inception of affording relief to the indigent sick. Measures in the annual reports such as the number of patients treated, the number of operations, and the

death-rate served this purpose. Another essential role the management played was to ensure the financial survival of the institution. Unlike today where a hospital or health authority can potentially be bailed out by additional finance from central government, no such facility existed for the voluntary hospitals. The managers of the Newcastle Infirmary were acutely aware that the finance of the hospital was provided by the local population to service the wishes of the local population and, accordingly, they had to be seen not to be squandering the limited resources at their disposal. As detailed below, operational cost controls were in place at the Infirmary during the period under review to achieve this purpose.

From the earliest days, but more especially from the early 19th century, there was a good understanding at the Newcastle Infirmary about the calculation of the cost of delivering particular services. The high cost consciousness of the organisation is evident in the inclusion in the 1853 Annual Report of comparative cost analyses stretching back over the first 100 years of operation, which was updated in subsequent reports. Two of the reports in the series, the one analysing cost per patient and the other annual receipts are included in Figures 2 and 3. The fact that the Infirmary was able to construct these reports indicates that costing records were kept from the very beginning.

INSERT FIGURES 2 & 3 ABOUT HERE

The level of understanding at the Newcastle Infirmary about its costs is reflected in the detailed nature of the *ex post* rationalisation of costs that was included each year in the narrative sections of the annual reports. These consistently reveal the hospital actively seeking ways to reduce costs, but without impeding its ability to treat patients. In 1878, for

example, it was reported that the hospital had achieved reductions in the cost of victuals through establishing central control over the distribution of meals to the patients (NUL, Hospital Archives, 72 – 1878 Annual Report). Comparisons were also regularly made between the increase in expenditure and the increase in the number of patients to determine whether the costs per patient were rising disproportionately. The annual publication of the cost per inpatient (see Figure 2 above) highlighted the on-going financial plight of the Infirmary and allowed the Board of Governors to demonstrate that the cost of inpatients had always been higher than the annual subscriptions. However, there is no evidence to suggest that management were trying to keep this figure within a tolerable range. It is true that the relaxation of the admission rules during the period identified by Holden *et al* (2009) would have had the effect of lowering the cost per inpatient ratio if the Infirmary had also cut costs. Instead, costs were rarely cut at the expense of patient-care, and indeed regular expansion and the introduction of new medical techniques generally increased the on-going costs of the institution. As a result, the production of the cost per inpatient was unlikely to have been for the purposes of reducing or controlling costs, but to highlight the funding deficit and the need for greater donations.

To arrive at the cost per patient, the Infirmary had to deal with the problem of overhead allocation. In this, as in other areas, the House Committee took note of what other hospitals were doing. This is acknowledged in the 1853 Annual Report, where the Treasurer, betraying a sophisticated understanding of costing, explained how the calculation of average cost per patient had been arrived at:

> It assumed that the whole cost is chargeable to the in-patients, except the drugs and surgical instruments, which are divided equally amongst all patients, both in and out. The average cost of the out-patients for drugs, is probably not in fact quite so much as that of the inpatients; but as to set against this may be considered that a part of the House Surgeon and Dispenser's Salary should be apportioned to them, the calculation is probably as near an approximation to the fact as the case admits. *In confirmation of this view, the Committee (of Governors) observe that the same rule of apportionment has been adopted at other Hospitals* [emphasis added] (NUL, Hospital Archives, 72).

The costing system employed by the hospital was capable of calculating the maximum capacity of inpatients that could be housed given the available finances. This was demonstrated at the weekly House Committee meeting on 26th April 1860 when the following notice was ordered to be placed in the local newspaper:

> The House Committee of the Infirmary feel it their duty to call the attention of the Governors to the present pressure upon the Institution. The average number of patients the funds are capable of supporting at one time is not more than 165 whereas in the past week the number has been as high as 213. Governors are therefore requested to be particularly careful at the present time in not giving letters [of admittance] except in cases of extreme urgency as the Committee can not consistently with ordinary prudence continue to admit a number so much in excess of the means of the charity (TWAS, HO/RVI/2/22).

It is noteworthy that it is the funds that are identified as the limiting factor rather than the physical capacity of the Infirmary. It was common practice at the hospital to utilise all available space to house patients needing treatment, including the sharing of beds. Few in need of treatment were denied due to capacity constraints.

The scope and sophistication of the hospital's record-keeping are apparent from the 1878 Annual Report which contained extensive schedules analysing: the numbers of inpatients and outpatients treated; the number of patients treated who had suffered serious injury from accidents; the number cured or "relieved"; the average cost of the inpatients; the average daily number of patients; the average length of stay of the inpatients; the number of deaths and the death-rate. Prior year comparatives and 12-year average were given for all these figures (NUL, Hospital Archives, 72).

The importance of the death-rates and average length of stay as key performance indicators is again illustrated by the 1878 Annual Report. This revealed that the introduction of antiseptics at considerable cost three years previously had not produced the anticipated fall in the number of deaths to justify the costs:

> The improved dieting, the increase of the nursing staff, the introduction of the antiseptic system, all of which have greatly increased the cost of the Institution, have not greatly tended to save life or quicken the process of care (NUL, Hospital Archives, 72).

The report went on to compare the current year with 1863 in terms of cost per patient, death rate and average stay in hospital. Only the average stay was comparable. The other measures had deteriorated. It was with relief that the governors were able to report the following year that the antiseptics were at last having their desired effect and that the death-rate was now the lowest since 1860. The revolutionary antiseptic system where carbolic acid was applied to wounds, following the work of Joseph Lister,[3] was quickly introduced in all surgical hospitals, thereby greatly reducing the death-rate after operations. Innovations such as this recognised that cost was not the main driving factor in their implementation. There is, for instance, no evidence that the cost of carbolic acid was compared to the cost of linseed, the previous treatment at the Infirmary. What is particularly interesting in this case, apart from the fact that the new antiseptics were a disappointment, is that the management were clearly unconcerned about giving information on a decision that at the time had increased costs without any resulting benefit. Thus, the excerpt from the 1878 Annual Report provides a compelling example of the *ex post* use of cost information by the hospital management because it illustrates that cost reduction was not their chief priority, but a reduction in the death-rate of patients. Other comments in the annual reports support that view. For example,

[3] Joseph Lister was a Fellow of the Royal College of Surgeons of Edinburgh and later a surgeon at the Royal Glasgow Infirmary, and pioneered the use of carbolic acid in the 1860's to clean wounds during and following surgery. For this reason Lister is often known as the "father of modern surgery"

the 1879 report pronounced that "in times of mercantile depression, retrenchment is necessary in most quarters, but many sacrifices ought to be endured rather than allow the Infirmary to suffer". The point here was that spending should continue despite the economic downturn. The 1880 report cited the case of a patient with a compound fracture of the arm who had been kept in hospital for 27 weeks in order to save the limb, and had therefore exceeded the hospital's permissible length of stay under its own rules by 4 months. The report went on to state that had the arm been amputated – the most cost-effective option – she might have been discharged in 4 or 5 weeks. Considering that the annual reports were the main medium by which the management were held accountable by the hospital's financial supporters, the publication of these extracts placing patient-care above cost, suggests they shared this view.

Then, as is now common in hospitals, there was tension between the medical staff on the Medical Committee and the administrators, the House Committee. On one occasion the Medical Committee minutes of 30 December 1865 refer to a request by the House Committee to reduce milk in the diet of patients following a price rise resulting from a cattle plague that had reduced supply (TWAS, HO/RVI/22/1). The Medical Committee refused this request, insisting on strict adherence to the milk diet. Similarly, in 1876 the House Committee noted the increasing cost of wine, spirits and fermented liquors given to patients. The House Committee asked for the prescription of such liquors to be kept within moderate bounds for "moral and financial reasons". The Medical Committee again refused the request, prompting the House Committee to require a report on the types and quantities of liquors consumed and the class of patients treated. Prior to this, the expenditure on liquor was £120 8s 2d in the first quarter of 1876, and in the second quarter £123 9s 3d. It subsequently fell to £56 3s 9d in the third quarter and £38 3s in the fourth quarter (NUL, Hospital Archives, 72, 1876 Annual Report). Although the Medical Committee had at first refused the House Committee's

request, they clearly reacted to it once they realised that the expenditure would be subject to greater scrutiny by the governors in future.

It was not always the House Committee making requests to the Medical Committee. For example, on 25 March 1868 the Medical Committee resolved to lay before the House Committee an appeal for an increase in the number of nurses, if the funds of the hospital would allow, following a complaint by the surgical staff that the surgical wards were understaffed. The request was refused on this occasion, despite there being fewer than 15 nurses in the Infirmary to look after an average daily number of patients in excess of 175. Although the House Committee was responsible for the recruitment and selection of resident staff, it delegated its authority to the House Surgeon and Matron at times of crisis where speed of action was vital. This can be seen from the following extract from the House Committee minutes of 15 September 1853:

> In consequence of additional labour caused by great number of persons frequenting the Infirmary for relief of diarrhoea and cholera, the House Surgeon be empowered to procure such additional assistants as he thinks necessary from time to time: and matron also be empowered to provide whatever may be necessary for the comfort of any person affected with the disorders (TWAS, HO/RVI/2/20).

Despite the obvious and potentially significant financial implications of this decision, the Infirmary archives contain no evidence to suggest that the cost implications were considered. The overriding impression from the hospital minutes is that whilst cost was taken extremely seriously, and kept to a minimum where possible, it was not ultimately allowed to outweigh patient needs.

It is nonetheless clear from the House Committee minutes that the Infirmary kept a close eye on costs from its foundation. Contained within the minutes of each quarterly court was the statement: “The following notes being examined by the auditors and found right were passed by the committee and ordered to be paid.” There then followed a list of classes of

expenditure and amounts. In later years, but especially from the 1820's onwards, these types of expenditure were split between headings such as victuals, liquors, drugs, repairs, malt and stationery, which were in turn used to produce a quarterly analysed cash book. The paper has already commented on the internal channels through which costs were reported to the House Committee and quarterly courts of governors. In addition, the minutes of the House Committee from the 1820's onwards show that every quarter suppliers were asked to tender for items such as meat, flour, malt and hops. Invariably the cheapest quote was chosen although the minutes indicate that the quality of the products was also an issue. Thus, tendering constituted alternative means of cost control, this time not involving the production of accounts.

In 1887 a Special Committee produced a major report on the past management and financial position of the Infirmary (TWAS, HO/RVI/70). The report examined the types of patients as well as the major areas of expenditure and then made recommendations. Not surprisingly, a prominent inclusion in the report was the number of patients admitted in breach of hospital rules. The key recommendation was the abolition of the letter system to make the Infirmary a hospital free to all. Other recommendations included the abandoning of the House and Medical Committees in favour of one combined Committee and opening wards for patients who contributed towards their own maintenance. What was being advocated was effectively a form of early private care in hospitals. Although this particular recommendation was not implemented, the fact that the Committee now considered that wealthy individuals would choose to be treated at the Infirmary, rather than at home, shows how far the hospital had progressed in the facilities and services on offer. From a costing perspective, the Special Committee also recommended adopting the method of keeping accounts used by the Edinburgh Infirmary, which recorded expenditure on patients according to member of staff. This last recommendation shows an advanced application of costing, as

each doctor would effectively become a cost centre and, as such, their actions and the financial consequences thereof be more visible.

There are two related reasons why the hospital management were anxious to track and analyse operating costs. First, there was the need to control expenditure in order to safeguard the activities given that its regular income from subscriptions was limited. The internal disputes over expenditure on milk and liquor referred to above are examples of the House Committee monitoring the level of spending on provisions and taking reactive decisions to reduce it wherever possible. Concern over the hospital's ability to meet its expenses stemmed from its charitable status which made it dependent on voluntary contributions for its survival. Secondly, detailed recording and analysing of costs played an additional and crucial role in securing the continued financial support of the local community by highlighting the high cost of the services provided and by demonstrating that the hospital management were providing good value for the moneys donated. It is in this light that the *ex post* rationalisation of the operating costs in the narrative sections of the annual reports should be interpreted, as well as the various published key-performance indicators, such as death-rate and cost per patient. These were the criteria by which the management were held accountable. Their success in garnering affirmation from their peers is evident from the level of financial support received. In none of the years in question did the Infirmary fall into deficit (Holden *et al*, 2009), notwithstanding the expansion in the number of patients and range of treatments on offer.

By the end of the period under review controlling costs was ever more vital to the Infirmary owing to the expansion of its activities and the financial pressure that this created. Despite the uncertainty expressed initially over the benefits of the new antiseptic system, its arrival eventually played a dramatic role in improving death-rates, whilst at the same time greatly increasing costs. The success of the antiseptic system coupled with the use of anaesthetics gave the surgeons the confidence to perform operations previously they would

not have considered possible. As more people survived the aftermath of surgery, more operations were performed. Whereas in 1876 the total inpatients for the year was 1,630 and there were 297 operations performed, only eight years later in 1884 the figures had reached 2,578 inpatients and 908 operations. This large increase in numbers of both inpatients and operations together with the resulting increases in annual expenditure rendered the existing funding arrangements untenable. As noted above, the system changed completely in 1888. Major investment in capital was also needed to cope with the increasing demands, culminating in the building of a new hospital in 1906, the Royal Victoria Infirmary. A number of these capital projects were undertaken in the period of study, and the question which the next section addresses is the extent to which costing underlay these investment decisions.

Capital projects

Throughout the life of the Infirmary, the House Committee showed little hesitation in regularly committing itself to heavy expenditure on improvements and new facilities, including: the new Dobson Wing (1855); a Turkish air bath (1860); the purchase of land adjacent to the hospital for the exercise of convalescent patients, and to prevent others building on it (1863); new flooring and fire escapes (1867); a hydraulic lift (1876); new operating theatre and associated ward (1878); refitting the kitchens and dispensary, new drains, floors and cooking range, improving lighting and ventilation (1880); and the temporary Ravensworth Wards (1885). Despite the often significant sums involved in these building improvements and additions, there is no evidence that accounting provided more than a minor contribution to investment decisions when judged from an economic as opposed to social perspective. What mattered most was enhancing the Infirmary's ability to meet the medical needs of the local community. Need was the overriding determinant of investment

decisions, not funds currently available. Indeed, decisions were taken by the hospital governors to invest heavily in capital improvements before funding had been secured. These were essentially leaps of faith in that they relied upon the continued generosity of the benefactors, who on numerous occasions since the foundation of the Infirmary in 1751 had provided the necessary funds. This is clearly illustrated by the following extract from the 1853 Annual Report:

> When, a hundred years ago, the Infirmary was founded, the subscriptions were on so liberal a scale as to leave the Institution at the end of the first ten years in possession of a capital of £7,000, and that, too, after defraying the cost of the original building. Again, fifty years ago, when the first new wing was built, we find that the annual subscriptions and other contributions received an immediate increase of nearly one half. The Committee, therefore, indulge a confident hope that the present age will not be found less inclined to acts of charity then those referred to (NUL, Hospital Archives 72).

Fortunately for Newcastle and its environs, the confidence in the generosity of the hospital's benefactors was time-and-again borne out in practice. For example, the pre-eminent northern industrialist, armaments manufacturer and philanthropist William Armstrong covered the entire cost of major improvements in 1870 (TWAS, HO/RVI/2/24, House Committee Minutes 1st April 1869). Two governors did likewise in 1880 (NUL, Hospital Archives, 72, 1880 Annual Report, p. 6). The consistent support of the hospital's benefactors over many years gave the House Committee the confidence to invest in projects that were expected to provide the best results in terms of improving patient recovery, even if they were not the cheapest options available. One can see this in the efforts of the Infirmary to eradicate infections contracted in hospital, specifically *pyaemia* (septicaemia, blood-poisoning) and *erysipelas* (a bacterial skin infection). These were the hospital's major killers for most of the period examined. Florence Nightingale believed the problem lay in noxious matter becoming embedded in the wards. Therefore, non-absorbent floors, walls and ceilings would be an effective preventative (NUL, Hospital Archives, 72, 1861 Annual Report, pp.

10-11). Floors, for instance, should be constructed of highly varnished and polished hardwood. At the same time, antiseptics were being put forward as an alternative solution following the discoveries of Lister and Pasteur. The result was that both systems were adopted at Newcastle in order to maximise the chances of success, together with other general improvements in sanitation, hygiene and ventilation. The primacy of effectiveness over cost is evident in the comment in the 1866 Annual Report that if only "the importance of keeping a dry floor" been "recognised as it is at present, nothing but [the more expensive] oak or teak would have been used" in the first place (NUL, Hospital Archives, 72, 1866 Annual Report, p.6).

Two capital additions in the period, the Dobson Wing (1855) and the Ravensworth Wards (1885), a temporary wooden building erected as a stop-gap measure for housing more patients, highlight the relatively minor contribution of accounting to investment decisions, and in particular the lack of *ex ante* information produced. Both of these capital outlays increased the capacity of the Infirmary and as a result had initial as well as on-going funding implications.

Dobson Wing

The original decision to address the growing problem of overcrowding with the addition of the Dobson Wing was taken at the Anniversary Meeting held on 3rd April 1851 (TWAS, HO/RVI/2/20). No estimates were given at this point in time of the construction costs or the additional annual costs that would arise as a result of the increased number of inpatients. It was agreed that the burden of construction should not be allowed to fall on the existing finances and that additional funds would need to be raised.

A Building Committee was established and charged with the responsibility of visiting other regional hospitals to ascertain good practice and to work with the architect, Mr John

Dobson, in drawing up plans. The House Committee agreed the plans at a meeting on the 12th February 1852 with estimated costs in the region of £5,730. The works went out to tender and the quotes were laid before the House Committee on the 6th May 1852 (TWAS, HO/RVI/2/20). Three quotes were obtained for the complete works ranging from just under £5,812 to £6,617. To put these costs into perspective, the total annual subscriptions received as reported in the 1851 Annual Report were just over £1,905. It was decided to opt for the lowest quote, and Messrs Gibson and Stewart were awarded the contract. The building work commenced in 1852 and during the period of construction various additions and alterations were made to the original plan giving a net overall increase to the total cost. In the end, the actual anticipated building costs were expected to be nearly £7,000; £1,200 or approximately 20% over the winning tender price, but the actual final cost was £10,554, almost double the original estimate. The House Committee requested a further report from the Building Committee in 1855 to examine the overspend, which opined:

> In carrying out this undertaking the building committee *have not allowed the mere consideration of expense to prevent the execution of any work of undoubted utility*, although they have exercised utmost vigilance in seeing that works were constructed with economy [emphasis added] (TWAS, HO/RVI/66/5-6).

As was the case with food and other provisions, the initial control of costs took place through the well-established tendering process. The decision to invest had already been taken before the House Committee received the estimate of £5,730 from the Building Committee. It functioned as a benchmark for evaluating the three tenders received. The dual objectives of the whole exercise were to obtain the best value for money and to determine how much finance the hospital would need to raise, not to decide whether the project should go ahead. In similar vein, it must have been clear from the outset that the additional capacity would increase the on-going operating costs of the infirmary, but we only find mention of this in subsequent annual reports, suggesting it was not considered critical to the decision of whether

to go ahead. The following reference from the 1853 Annual Report, nearly two years after the decision had been taken to build the new wing, is an example:

> …70 additional beds capable of containing an annual increase of about 700 patients, the cost of whose maintenance cannot well be estimated at less than £1,200 or £1,400 a year (NUL, Hospital Archives 72).

Similarly, the 1854 Annual Report referred to the current level of annual subscriptions not being "equal to what they should be if the Institution is to make use of 50 beds in the new wing" (NUL, Hospital Archives, 72).

It follows that the hospital management took the decision to build the new wing irrespective of the scale of capital required or running costs. So confident were they that the hospital's benefactors would find the extra money needed, the only relevant considerations were how to maintain and improve the hospital's services; and how to ensure good value for money. This is reflected in the lack of *ex ante* cost projections. However, once the decision had been taken to build the wing, efforts were made to keep costs to a minimum, notwithstanding the significant overrun. A host of information was produced including detailed tenders, architect's plans, reports of visits to other institutions, and comparisons in the annual reports between the resultant increase in operating costs and the current state of annual subscriptions. Apart from the need to control costs, this information was intended to encourage additional subscriptions and donations; and it is noteworthy that the reports of the hospital's various building and special committees were published and therefore freely available alongside the annual reports.

Ravensworth Wards

The building of the Ravensworth Wards 30 years later followed a similar pattern. Subsequent to the opening of the Dobson Wing in 1855 and the increased the capacity that it

provided, the growth in population, advances in medical practices and surgical techniques in the 1860's and 1870's resulted in the Infirmary once again facing the problem of overcrowding. Thus, the decision was taken in 1885 to build a new and enlarged hospital. This was another example where financial considerations were subordinated to patient needs. A Special Committee, comprising the House Committee and medical staff, was established in 1884 to consider how to alleviate the hospital's acute shortage of space. A serious consideration of the costs involved was absent from the discussion, and in the end the Committee decided on the most expensive course possible. This was to commit to building a new hospital in "a more salubrious locality", but in the meantime to construct a new temporary wing in the hospital garden that became known as the Ravensworth Wards. It is significant that the 1884 Annual Report was only able to cost the new temporary building "at about" £2,000, whereas no figure could be placed on the new hospital, merely that it would be "an expense of many thousands of pounds" (NUL, Hospital Archives 72). In other words, so confident were the Special Committee in the generosity and loyalty of the hospital's benefactors to commit significant resources, that the decision to build these new facilities was taken without an accurate idea about the costs involved. For example, no information was produced that would indicate the on-going costs created by the construction of a new hospital, and importantly whether the management would be able to bring in the increased income necessary for it to survive.

The Ravesworth Wards increased the capacity of the Infirmary to 270 beds following their opening in October 1885. The 1885 Annual Report states that the total cost, including architect's fees, amounted to £2,260.11s 8d. It was noted that all but £50 had already been raised by special subscriptions, which demonstrated the generosity of the subscribers in

raising the money so quickly for what was a temporary structure.[4] Like the Dobson Wing before, there was a clear overspend of more than 10% compared to the initial estimate. Yet, there is no mention in the House Committee minutes of the reasons for this or investigation into its causes, just as there is no record as to how the original estimate of £2,000 had been arrived at. Once again, amidst the very considerable, detailed, and comprehensive documents that the Infirmary took great pains to preserve, there were no published or minuted estimates of the increased on-going costs that would result as a consequence of the decision to build the new wing. Apart from the initial rough estimate of £2,000, all cost information was produced *ex post.*

The lack of detailed estimates and projections was mitigated in part by the dialogue subsisting between the voluntary hospitals that could effectively turn *ex post* information from one institution into *ex ante* information for another. There is sufficient evidence to suggest that good practice was shared between voluntary hospitals at this time, as was the case when the Building Committee was sent to look at best practice in similar institutions ahead of the construction of the Dobson Wing. This sharing of information had costing implications. For example, in the 1864 Annual Report the House Surgeon comments on the Turkish Bath recently installed:

> The bath is in operation three days per week and the economy attending its working will favour its adoption in similar institutions, where the chief aim is to realise the greatest amount of good by the simplest and least costly of means (NUL, Hospital Archives, 72).

An excellent example of how the Infirmary used *ex post* information from another institution to inform a decision *ex ante*, this time relating to the hospital's funding

[4] As generous as the contributions were for the new buildings during our period to 1888, these paled into insignificance compared to the sums required to construct the new hospital that was finally built in 1906 at a total cost of £203,527. Of this amount, £100,000 was paid for by the Armstrong family, the other £100,000 by John Hall, a local ship-owner (McCord, 1979, p.175).

arrangements, can be found at the very end of the period under review. In 1887 the report of the Special Committee to investigate the past management and financial position of the Infirmary recommended that the letter system be abandoned and the Infirmary become a free institution, as had been the case at the Sunderland Infirmary since 1877. The report noted that Sunderland Infirmary had "not been in debt since the free system had been introduced because the workman's payments far more counterbalanced any loss in subscriptions". The report noted that ordinary workman could not afford to become a subscriber, but could and would be willing to pay smaller regular sums. In over 200 works the workman of Sunderland had adopted "a penny per week plan", which in total far exceeded the annual subscriptions from the companies themselves. Hence, the Committee recommended the Sunderland system be adopted at Newcastle. This was agreed at the quarterly court in March 1887, and a year later the 1888 Annual Report stated:

> In making the hospital free it was thought that it would command, to a greater extent than before, the support of the working class. This expectation has been realised, the sums sent in from the factories of the district exceeding by nearly a thousand pounds the amount subscribed by them in the previous year (NUL, Hospital Archives, 72).

An interesting direction for further research would be to ascertain the extent to which the free flow of information between these not-for-profit organisations was replicated in the commercial sector in Newcastle and surrounding regions at this time, particularly considering that many governors of the Newcastle Infirmary were themselves businessmen.

Conclusion

This study has examined the nature and function of cost accounting within the Newcastle Infirmary, a not-for-profit organisation, in the latter half of the 19th century. Based on evidence from the vast store of books and records that have been carefully preserved by the Infirmary, the study found that the costing arrangements were more about creating the

right appearance, demonstrating able stewardship, and less about forward-planning and decision-making. The hospital relied on voluntary contributions for its maintenance and expansion, and management needed to be able to demonstrate that they had utilised those moneys effectively in order for that support to continue. Partly this was achieved through tracking costs and taking reactive decisions to reduce expenditure wherever possible. Putting contracts out to tender provided an alternative non-accounting means of cost control.

It was not just about the reality of the situation but the appearance also, and the various key-performance ratios in the annual reports, such as cost per patient or average length of stay should be interpreted in this light alongside the copious *ex post* rationalisation of costs appearing in the narrative sections of the reports. In order to persuade the public to fund the development of the hospital it was necessary to demonstrate that costs were being managed efficiently. In particular it was necessary to show that the governors and those whom they appointed to manage the hospital were worthy of people's trust (see for example the 100th Annual Report in 1851, NUL, Hospital Archives, 72). Accordingly, a well-developed system of costing played a critical role in attracting financial support from the subscribers and other benefactors.

The relatively minor role of costing in decision-making within the organisation is highlighted by its capital investment decisions where detailed *ex ante* projections are conspicuous by their absence. The review of the capital projects undertaken at the time revealed once again the use of accounting information *ex post* as a means of fully detailing the expenditure that had been incurred and to explain why the expenditure was necessary. Costing played little role in the actual decisions, although this was mitigated to a degree by the willingness of voluntary hospitals to share information about the costs of similar projects they themselves had undertaken. Wherever possible the governors of the Newcastle Infirmary were keen to fund capital expenditure out of separate fund-raising initiatives. In this regard

they were successful and all the major capital additions in the period were funded in this way. One aspect the governors did not examine, publicly at least, was the consequence of a particular addition for the on-going costs of the Infirmary until after the decision to invest had been taken. No *ex ante* information was found to this effect although the costing systems in place and the annual figures produced would have made this easy to construct. Given that the governors mostly had business backgrounds, this absence seems particularly surprising.

These findings stand in marked contrast to the raft of studies relating to the British industrial revolution that found costing playing a significant role in decision-making. The crucial difference between the Newcastle Infirmary and these industrial undertakings, however, is that the hospital effectively had access to whatever finance it needed for its development. Moreover it was cost free. Funds were provided by the local community: the individual subscribers, company subscribers, trade unions, local authority, church congregations and major philanthropists. The proviso was that management first needed to be able to demonstrate a) the existence of pressing medical need; and b) that the moneys donated were being used efficiently. The overriding objective, however, of the Infirmary, the healing of the sick, was both supported by and took precedent over secondary objectives such as cost minimisation and control. The primacy of medical need over the cost of providing it is evident from the narrative sections of the annual reports. Given that the annual reports were the main mechanism by which the hospital management were held accountable, it is reasonable to assume that the hospital's financial supporters shared those priorities.

Why the benefactors took such an apparently altruistic stance is open to debate. Partly it was a reflection the wealth of the region at this time, which marked the heyday of Newcastle's industrial expansion. It was also in the interests of the employers to have an effective system for restoring their workers to health. Treating the "indigent" or deserving poor was after all the hospital's express purpose according to its constitution, notwithstanding

that the distinction between which poor were "deserving" or "undeserving" collapsed in practice (Holden *et al* 2009). Another factor is the moral dimension especially considering that the Infirmary was a Christian foundation. With a growing population, heavy industry and medical advances all making it increasingly difficult for the Infirmary to fulfil its healing mission, committing to these capital projects was the only moral option available. Therefore, in order to be accountable to the public they effectively served, the governors not only had to be economically accountable but morally accountable also. As a Christian institution, they could not and did not defer improvements that would bring benefits, and it is noteworthy that church collections constituted a regular and dependable source of funds to the hospital throughout the period. Finally, there is the question of civic pride and the town's redevelopment. The 19th century was the period when Newcastle was completely remodelled with the building of the "New Town" and other monumental rail and civic architecture. The inspiration for Newcastle's new Classical facade came from two directions: the New Town in Edinburgh and John Nash's work in London for the Prince Regent (Faulkner, 2001). The redevelopment of the town was not just an indicator of the wealth of the region, but of the aspiration of its middle-classes that Newcastle should be regarded as the equal of, if not better than its peers; and their willingness to fund the development of the Infirmary reflected this civic vision. The sense of moral mission combined with one of civic pride is echoed by the following quote from the 1878 annual report:

> Whilst no efforts should be spared to make it [the Infirmary] more useful, they [the governors] regard it as it now is, an institution of priceless value to suffering humanity, a grand outcome of that benevolence which Christianity inspires, and a honour to the town and the North of England (NUL, Hospital Archives 72).

The financial support of the Infirmary proffered by the local middle-classes suggests these sentiments went beyond rhetoric.

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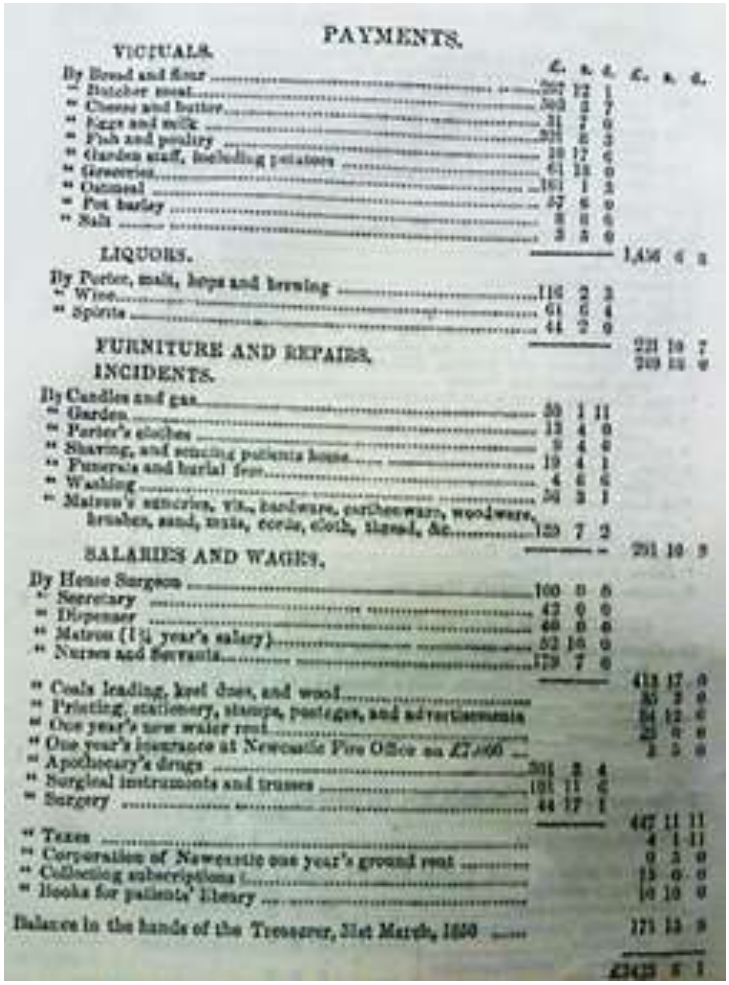
Figure 1. Analysis of payments in the 1850 Annual report



PAYMENTS.

VICTUALS.

	£.	s.	d.	£.	s.	d.
By Bread and flour	[illegible]	12	1			
" Butcher meat	303	2	7			
" Cheese and butter	[illegible]	[illegible]	[illegible]			
" Eggs and milk	31	7	0			
" Fish and poultry	225	8	3			
" Garden stuff, including potatoes	10	12	6			
" Groceries	61	13	0			
" Oatmeal	161	1	3			
" Pot barley	57	6	0			
" Salt	3	5	0			
				1,456	6	3

LIQUORS.

By Porter, malt, hops and brewing	116	2	3			
" Wine	61	6	4			
" Spirits	44	2	0			
				221	10	7
				269	11	9

FURNITURE AND REPAIRS.

INCIDENTS.

By Candles and gas	59	1	11			
" Garden	13	4	0			
" Porter's clothes	9	4	0			
" Shaving, and sending patients home	19	4	1			
" Funerals and burial fees	4	6	6			
" Washing	36	3	1			
" Matron's sundries, viz., hardware, earthenware, woodware, brushes, sand, mats, cords, cloth, thread, &c.	129	7	2			
				291	10	9

SALARIES AND WAGES.

By House Surgeon	100	0	0			
" Secretary	42	0	0			
" Dispenser	40	0	0			
" Matron (1¼ year's salary)	52	10	0			
" Nurses and Servants	179	7	6			
				413	17	6
" Coals leading, keel dues, and wood				85	3	0
" Printing, stationery, stamps, postages, and advertisements				34	12	6
" One year's new water rent				25	0	0
" One year's insurance at Newcastle Fire Office on £7,000				3	5	0
" Apothecary's drugs	301	3	4			
" Surgical instruments and trusses	101	11	6			
" Surgery	44	17	1			
				447	11	11
" Taxes				4	1	11
" Corporation of Newcastle one year's ground rent				9	3	0
" Collecting subscriptions				15	6	0
" Books for patients' library				10	10	0
Balance in the hands of the Treasurer, 31st March, 1850				171	13	9
				£1413	5	1

Figure 2. Table showing the average cost per patient from the 1854 Annual Report

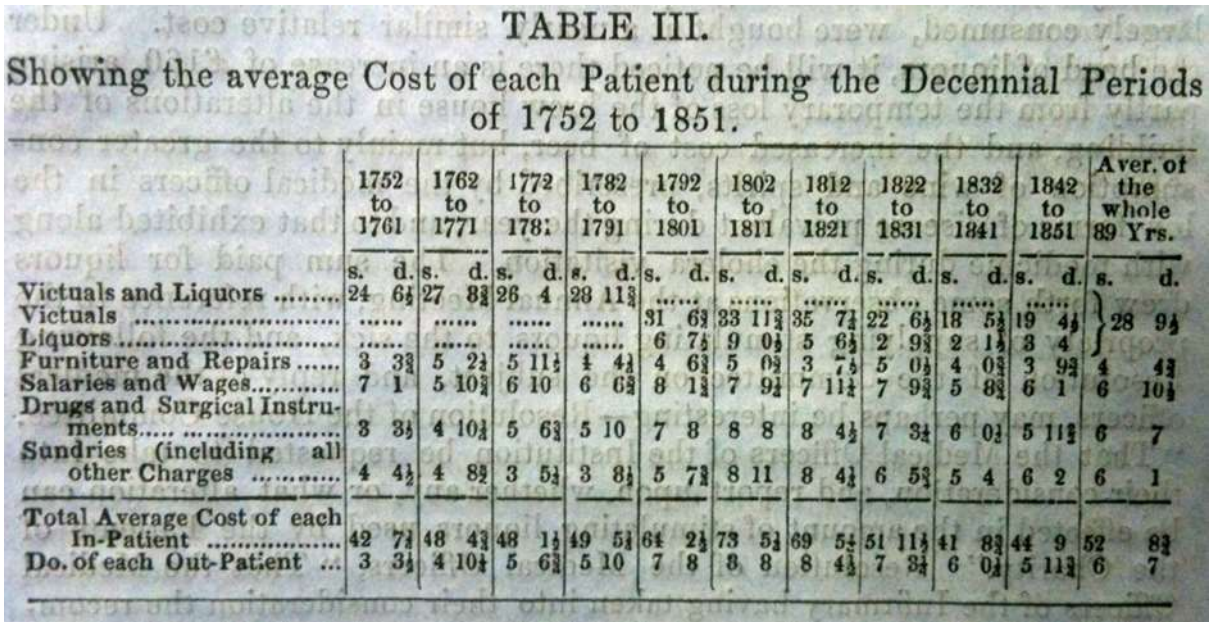
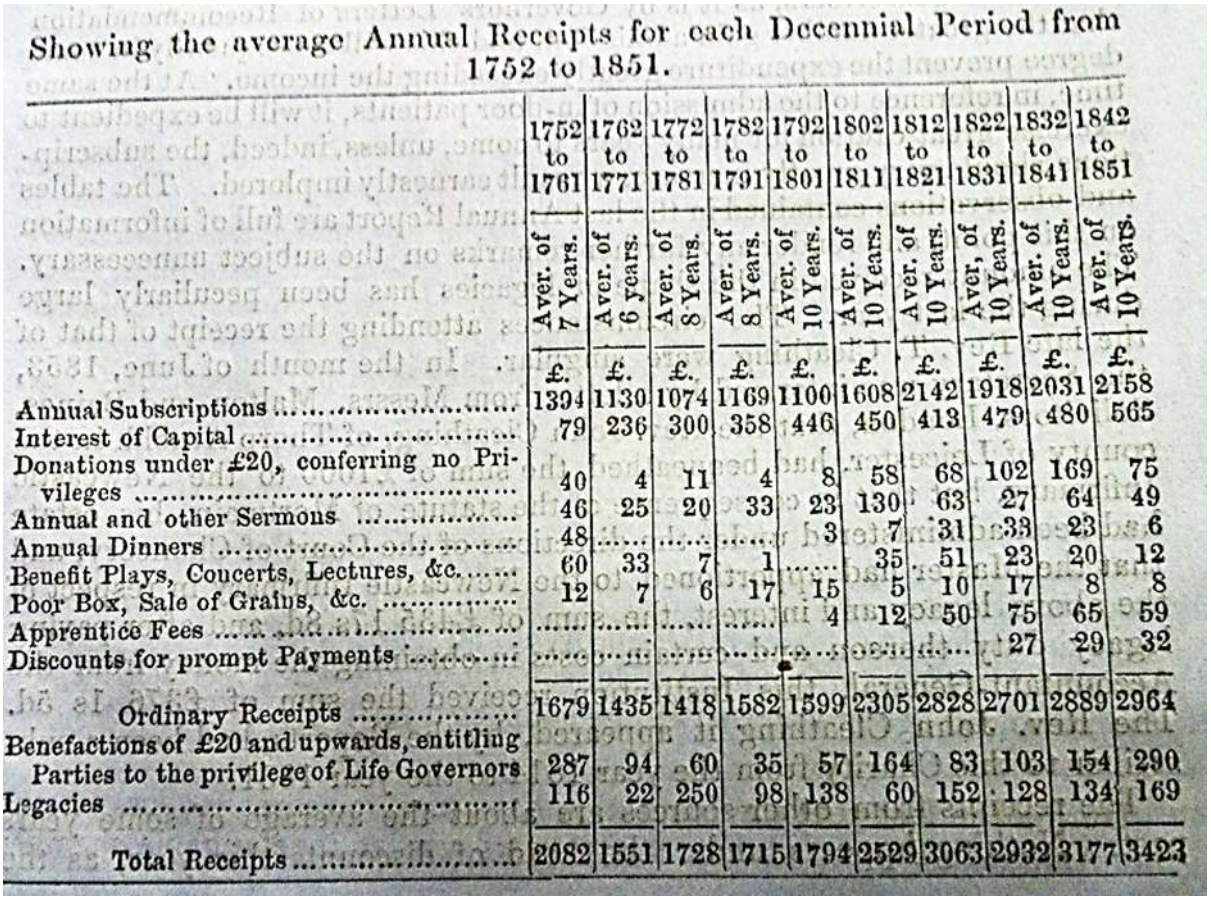


TABLE III.

Showing the average Cost of each Patient during the Decennial Periods of 1752 to 1851.

	1752 to 1761		1762 to 1771		1772 to 1781		1782 to 1791		1792 to 1801		1802 to 1811		1812 to 1821		1822 to 1831		1832 to 1841		1842 to 1851		Aver. of the whole 89 Yrs.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Victuals and Liquors	24	6½	27	8¾	26	4	28	11¾	.....		.....		.....		.....		.....		.....		28	9½
Victuals	.....		.....		.....		.....		31	6¾	33	11¾	35	7¼	22	6½	18	5½	19	4½		
Liquors	.....		.....		.....		.....		6	7½	9	0½	5	6½	2	9¾	2	1½	3	4		
Furniture and Repairs	3	3¾	5	2½	5	11½	4	4½	4	6¾	5	0¾	3	7½	5	0½	4	0¾	3	9¾	4	4¾
Salaries and Wages	7	1	5	10¾	6	10	6	6¾	8	1¾	7	9¼	7	11¼	7	9¾	5	8¾	6	1	6	10¼
Drugs and Surgical Instruments	3	3½	4	10¼	5	6¾	5	10	7	8	8	8	8	4½	7	3¼	6	0¾	5	11¾	6	7
Sundries (including all other Charges	4	4½	4	8¾	3	5¼	3	8½	5	7¾	8	11	8	4¾	6	5¾	5	4	6	2	6	1
Total Average Cost of each In-Patient	42	7¼	48	4¾	48	1½	49	5¼	64	2½	73	5¼	69	5¼	51	11½	41	8¾	44	9	52	8¾
Do. of each Out-Patient	3	3½	4	10¼	5	6¾	5	10	7	8	8	8	8	4½	7	3¼	6	0¾	5	11¾	6	7

Figure 3. Table showing the average annual receipts from the 1854 Annual Report



Showing the average Annual Receipts for each Decennial Period from 1752 to 1851.

	1752 to 1761	1762 to 1771	1772 to 1781	1782 to 1791	1792 to 1801	1802 to 1811	1812 to 1821	1822 to 1831	1832 to 1841	1842 to 1851
	Aver. of 7 Years.	Aver. of 6 years.	Aver. of 8 Years.	Aver. of 8 Years.	Aver. of 10 Years.	Aver. of 10 Years.	Aver. of 10 Years.	Aver, of 10 Years.	Aver. of 10 Years.	Aver. of 10 Years.
	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.
Annual Subscriptions	1394	1130	1074	1169	1100	1608	2142	1918	2031	2158
Interest of Capital	79	236	300	358	446	450	413	479	480	565
Donations under £20, conferring no Privileges	40	4	11	4	8	58	68	102	169	75
Annual and other Sermons	46	25	20	33	23	130	63	27	64	49
Annual Dinners	48	.....	.....	.....	3	7	31	33	23	6
Benefit Plays, Concerts, Lectures, &c.	60	33	7	1	.....	35	51	23	20	12
Poor Box, Sale of Grains, &c.	12	7	6	17	15	5	10	17	8	8
Apprentice Fees	.....	.....	.....	.....	4	12	50	75	65	59
Discounts for prompt Payments	.....	.....	.....	.....	.....	.....	.....	27	29	32
Ordinary Receipts	1679	1435	1418	1582	1599	2305	2828	2701	2889	2964
Benefactions of £20 and upwards, entitling Parties to the privilege of Life Governors	287	94	60	35	57	164	83	103	154	290
Legacies	116	22	250	98	138	60	152	128	134	169
Total Receipts	2082	1551	1728	1715	1794	2529	3063	2932	3177	3423