

Revisiting Nightingale's vision to assess the outcomes of hospital treatment

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Abstract

Millions are admitted to hospital every year but very little is known about the impact that hospital treatment has on their health status. It is extraordinary that this is the case. In the 1860s Florence Nightingale led efforts to collect information about whether and by how much hospital treatment aided recovery and hospitals published results for their patients. But publication suddenly ceased and has only recently recommenced. I describe Florence Nightingale's vision for the use of information about health outcomes and the medico-political tensions that prevented this vision being realised for so many years. I then summarise research that uses this information to improve the quality of care of those who use the health service.

Introduction

Nightingale faced a similar problem in her role as superintendent of the female nursing team working in the English general military hospitals in Turkey. On arrival in Scutari in November 1854 she found three separate registers of those dying in hospital: the Adjutant's daily head-roll of soldiers' burials, the Medical Officers' Return and the Orderly Room return, all of which gave a different account of the number of deaths. She soon set about rectifying this "statistical carelessness" in order to record accurately how many soldiers had died. Unfortunately, we are still a long way from being able to compare meaningfully the death toll from coronavirus between one country and another.

Classifying diseases

On returning to England in 1856 Nightingale realized that each hospital had its own approach to recording information about its patients. So she created Model Hospital Statistical Forms which were recommended for widespread adoption in 1860 at the London meeting of the International Statistical Congress.

Nightingale had the forms printed and hospitals started using them. Guy's Hospital published details of its cases from 1854 to 1861, including a table reporting fifteen Classes of Diseases and another reporting Causes of Accidents, categorized into twenty-two groups.

Group 21, for example, records all those hospitalized having suffered “Bites of animals, 7 dogs, 2 adders, monkey, horse, rat, elephant, and woman”, revealing a somewhat surprising assortment of assailants on the streets of London back then or indeed whenever.

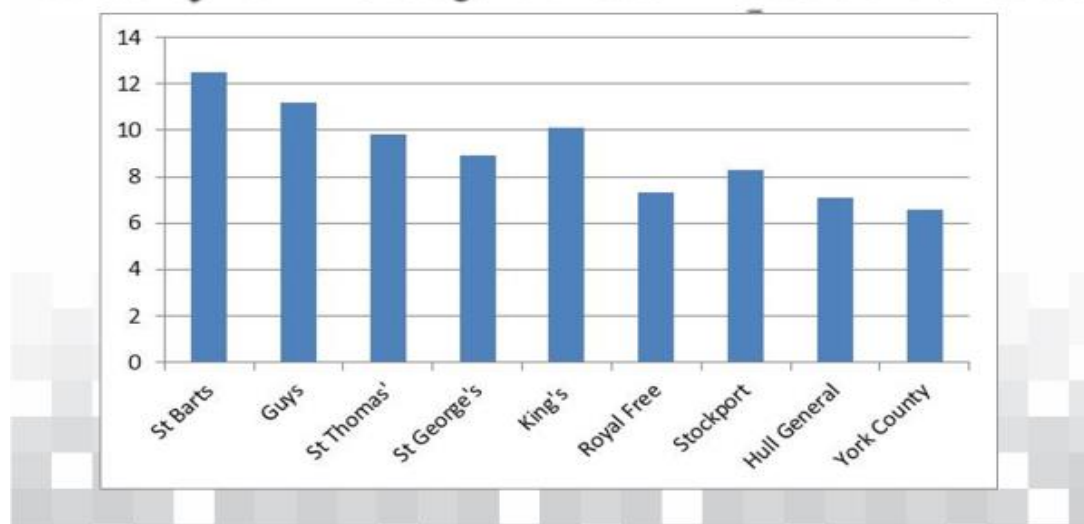
TABLE XI.—*The following Table gives the Causes of the Accidents, with the Sexes and Mortality.*

Causes of Accidents.	Total Cases.	Cured or Relieved.		Died.	
		Male.	Female.	Male.	Female.
1. Accidents on the river, in barges, and shipboard.....	90	78	3	9	—
2. Assaults	173	102	56	14	1
3. Accidental poisoning	37	15	14	5	3
4. Attempts at suicide	87	36	35	11	5
5. Burns from clothes taking fire	213	34	60	37	82
6. „ heated fluids	177	90	46	26	15
7. „ explosion of gas.....	12	11	1	—	—
8. „ gunpowder	23	16	2	3	2
9. Collisions between opposing forces	108	90	14	4	—
10. „ with street vehicles	416	299	55	54	8
11. Cuts and blows from sharp instruments	175	138	28	8	1
12. Falls down stairs	155	69	78	4	4
13. „ from a height, scaffolding, &c. ...	832	679	83	62	8
14. „ from curb stones and on the ground.....	553	417	116	18	2
15. Fall of heavy weights on patients	427	364	17	45	1
16. Gunshot wounds	16	14	—	2	—
17. Machinery accidents	233	216	2	15	—
18. Railway „	84	51	4	28	1
19. Sudden torsions of the body.....	64	60	4	—	—
20. Foreign bodies lodged in natural passages	22	15	3	1	3
21. Bites of animals, 7 dogs, 2 adders, monkey, horse, rat, elephant, and a woman.....	14	13	1	—	—
22. Causes of accident not ascertained	9	3	5	—	1
Total	3,920	2,810	627	346	137

From 1862 hospitals in London began to publish their data annually in the Journal of the Statistical Society of London. By 1866, the fifth and final year that the series was published, the statistics covered 29 hospitals across England (see Figure ??)



Rate of Mortality in the General Wards



Publication ceased after a committee formed by the Royal College of Surgeons “reported adversely upon Miss Nightingale's Forms” claiming it was too costly to collect the data and the difficulty of securing actual as well as apparent uniformity to make valid comparisons. (reported in Cook, 1913)

Nightingale's ideas were eventually resurrected by Jacques Bertillon whose system was adopted in 1900 as the first International Classification of Causes of Death. In June 2018, the World Health Organisation (WHO) launched the 11th revision, now known as the International Classification of Diseases, with 16,000 codes.

Protecting staff

Nightingale herself used data about those who suffered disease and died to push for improvements in care both for patients and staff. In 1858 one of her papers with William Farr was presented at the Liverpool meeting of the National Association for the Promotion of Social Science comparing mortality rates of hospital nurses with civilian women of a similar age. She identified a higher mortality rate among nurses, demonstrating that they had greater exposure to fever and cholera. She used the data to maintain her pressure on hospitals to improve hygiene and to provide better protection of staff.

Florence Nightingale devoted herself to evidence based analysis of disease and health care “for the surer advance of medical knowledge and in the interests of good administration”. Thanks in no small part to her efforts, our understanding of disease has improved enormously in

the 200 years since Nightingale's birth, as has our knowledge of how to provide effective care in safe environments. Even so the coronavirus crisis has demonstrated the limits of our ability to combat new threats and that health and care systems still need strengthening to meet the demands being placed upon them.

Things began to change with the Korner Review of NHS Data (1984).

Between 1991 and 1995 in Bristol Royal Infirmary between 30 and 35 more children under 12 months died from open heart surgery than expected.

In 1998, Frank Dobson, Minister of Health under the first Blair Government announced that the government would publish hospitality rates and mortality rates by named surgeon

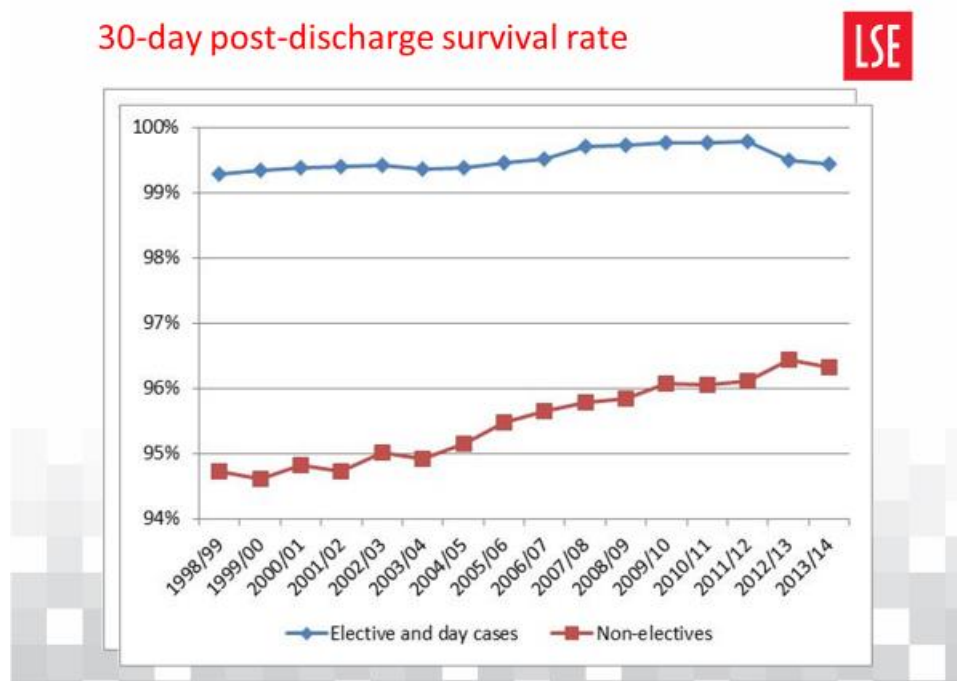
Collecting Outcome Data

Report Cards for cardiac surgery led to

- Fewer deaths but
- Selection of low risk patients (Dranove, 2003)

SCTS produced risk-adjusted mortality for CABG patients treated by 30 surgeons, published from 2001

- Fewer deaths and
- No risk selection (Bridgewater et al., 2007)

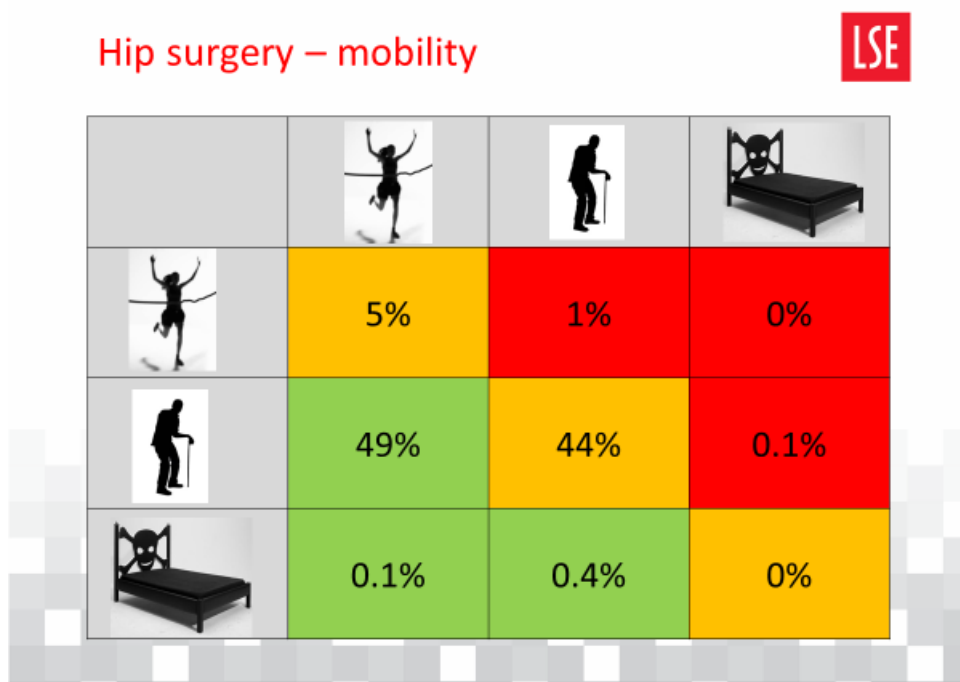


In 2009, England introduced the national Patient-Reported Outcome Measures (PROMs) [https://www.england.nhs.uk/statistics/statistical-work-areas/proms/] programme. Since then all patients having hip replacement, knee replacement or groin hernia repair have been asked to fill in a health questionnaire before they have surgery and once again some months afterwards.

By March 2015 nearly (800,000 patients)[http://content.digital.nhs.uk/catalogue/PUB21189/final-proms-eng-apr14-mar15-fin-report.pdf] had replied. By comparing each patient’s answers, we can find out how much better they felt after surgery.

This information is also valuable for anyone planning to have one of these operations. People thinking about having hip or knee replacement will want to know that they’ll feel better, if they’ll be able to walk without problems, get the shopping done and be free of pain. Now they can find out.

Before and After hip-surgery



##How will I feel after surgery?

At the University of York’s Centre for Health Economics we have developed a (webtool)[http://www.AfterMySurgery.org.uk] based on the answers to the health questionnaires completed by patients. The webtool summarises how different patients felt after surgery, taking

account of how they felt before surgery, how long they'd had health problems, and their age and gender.

Anyone thinking about having surgery can fill in the same simple health questionnaire. The webtool then matches these answers to similar patients who've had surgery before and summarises their experiences, showing how many felt better, worse or no different after surgery. The webtool also shows how many of these patients felt better in terms of walking about; pain; anxiety & depression; ability to wash and dress; and ability to carry out their usual activities.

The webtool is designed to be user-friendly and easily understandable. It only takes a moment to fill in and can be used during doctor visits or by patients and their families at home. It can be accessed from anywhere, so if you (or one of your friends or family members) are thinking of having hip, knee or hernia surgery, you can find out how you are likely to feel afterwards, based on what other people like you have said.

Between April 2009 and March 2016 500k English patients completed the EQ5D before surgery and 3 or 6 months afterwards:

Hip replacement: 185k

Knee replacement: 198k

Groin hernia repair: 115k

Gutacker & Street. (2017) Quality of Life Research

Our webtool ensures that this information can be tailored to the particular characteristics of each person. Until now such specific information has never been available to people thinking about having surgery. Doctors have been able to offer only vague guidance to patients about how people generally feel after surgery. Similarly the (NHS choices website)[<http://www.nhs.uk/Conditions/Hip-replacement/Pages/Introduction.aspx>] says only that “most people experience a significant reduction in pain and some improvement in their range of movement” following hip replacement. But people want to know what will happen to them, not to “most people”.

It is now possible to provide this information because so many past patients have shared their experience of surgery. This means that people in England can now make more informed decisions about whether or not to have an operation.

This figure shows how 100 patients like you felt six months after their operation, compared to how they felt before. These patients are similar

to you in terms of their age, gender and how they felt before having surgery.

Please note that these results only provide an indication of the likely outcome of your surgery.

There may also be a number of other things you may wish to know about, for example how long you will need to be in hospital for or what may happen if you do not have surgery. We recommend that you discuss these results with your GP or consultant.

Most people are likely to go ahead with the operation, the past experience of similar patients providing reassurance that they will feel better afterwards. But some people may decide their prospects of recovery are not worth the risk and decide against having surgery. Allowing people to make this decision themselves is better than denying care to some people simply because Clinical Commissioning Groups have imposed a set of rationing rules on their local populations.

References

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