

# Monitoring the Quality of Care using Aggregated Patient Feedback

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Griffiths, A., & Leaver, M. P. (2018). Wisdom of patients: predicting the quality of care using aggregated patient feedback. *BMJ Qual Saf*, 27(2), 110-118.

# Background / Context

- Initially looked at the CQC statistical surveillance tools that periodically aggregate large numbers of quantitative performance measures to identify risks to the quality of care and prioritise its limited inspection resource.
- CQC's 'Intelligent Monitoring' proving wrong more often than it was right\*.
- Millions of items of patient feedback – too many to do anything with!
- Individual sources are useful, but biased, combine them to increase volume and diversity – wisdom of the crowds.

\*Griffiths, A Beaussier, A., Demeritt, D., & Rothstein, H. 2017. Intelligent Monitoring? Assessing the ability of the Care Quality Commission's statistical surveillance tool to predict quality and prioritize NHS hospital investigations. *BMJ Qual Safe*, 26(2), 120-130.

# The Study

*Objective:* To determine whether the near real-time, automated collection and aggregation of multiple sources of patient feedback can provide a collective judgment that effectively identifies risks to the quality of care, and hence can be used to help prioritize inspections.

- combines multiple sources of patient feedback
- it looks at the more granular, hospital-level feedback
- measures the association between patient feedback and other quality measures at hundreds of points over more than 3 years, rather than a fixed point in time.
- patient feedback used is contemporary having occurred within 90 days of the start of the inspection
- covers a greater volume and diversity of trusts and hospitals as a result of increased engagement with social media by the NHS.

# Methods

Our analysis measures the statistical relationship between a time-limited collective judgement score (CJS) formed of patient feedback from multiple sources at the start of comprehensive CQC inspections, and the subsequent outcome of those inspections

*Dependent Variable:* **CQC inspection reports**. CQC awards one of four possible ordinally ranked ratings for each core service within a hospital: Outstanding, Good, Requires Improvement, Inadequate

*Independent Variable:* Data was scrapped from the official URL pages of **NHS Choices**, from the NHS Choices application programming interface (API) and each organisation's official **Twitter** and **Facebook** details

# Summary of Patient Feedback Data

## Summary of the three sources of patient feedback used to form the collective judgement score

	NHS Choices	Facebook	Twitter
Time period data available	1 January 2013 to 12 March 2017	1 January 2013 to 12 March 2017	21 February 2016 to 12 March 2017
Total number of comments collected	76 493	69 427	1 303 085
Unique comments suitable for study	76 493	69 427	20 914
Unique comments suitable for study covering 1 March 2016 to 28 February 2017	20 270	19 572	19 771
CQC-rated hospitals with an account/page	245	204	13
CQC-rated trusts with an account/page	148	132	142
Mean sentiment score (from 1 to 5)	3.85	4.13	4.28

- CQC, Care Quality Commission.

# NHS Choices



## Northwick Park Hospital

020 8864 3232

Watford Road, Harrow, Middlesex, HA1 3UJ

<http://www.lnwh.nhs.uk/>



Leave review

Based on 205 ratings for this hospital

Overview

Departments and services

Facilities

Contact details, map and directions

Reviews and ratings

Leave review

3 Stars



NHS Choices users' overall rating  
Based on 205 ratings for this hospital



Anonymous gave Accident and emergency services at Northwick Park Hospital a rating of 1 stars

### Visited A&E on 06/03/2017 @ 21:49 hours to see doctor

Visited NWP A&E on 06/03/2017 @ 21:49 hours to get treatment for a wound by accident. There was no queue in registration but nurse called after 2 hours and took vital signs. It's 5:23am now, there is no sign of calling me by doctor. I feel like going back home after waiting seven and half hours. It's ridiculous can't understand what doctors are doing or it's severely under staffed.

Visited in March 2017. Posted on 07 March 2017

Northwick Park Hospital has not yet replied.



Dee gave Urology at Northwick Park Hospital a rating of 5 stars

### Good care but better control of visiting hours needed

The care given at Northwick Park was excellent and the staff were very helpful. The only downside was that visitors were allowed to come and go at all hours even 9.30pm at night, which was disturbing when trying to rest after an operation.

Visited in February 2017. Posted on 07 February 2017

Northwick Park Hospital has not yet replied.

- c.25,000 quality-controlled comments attributed to Trusts and Locations each year.

- Multiple quantitative scores can be extracted from each comment:

- Cleanliness
- Staff co-operation
- Dignity and respect
- Involvement in decisions
- Same-sex accommodation

- Exact date of care available

# Facebook

St George's University Hospitals NHS Foundation Trust  
@StGeorgesTrust

Like Follow Recommend ... Send Message

Status Photo/Video

Write something on this Page...

**Reviews**  
4.2 ★★★★★ 676 reviews

Tell people what you think

**Eti Murray**  
★★★★★ · 4 January 2018  
Thank you to all the amazing people who looked after my mum from porters to health assistants, nurses, doctors, surgeons and everyone else - they were amazing and went over and above to help and serve... See more

**Alex Primhak**  
★★★★★ · 5 December 2017  
My Mother was an inpatient in one of the high dependency units at St George's last year. She sadly passed away but the care she received was wonderful and they tried everything they could. The care we... See more

See all

Hospital in London, United Kingdom  
4.2 ★★★★★  
Always open

**Ask St George's University Hospitals NHS Foundation Trust**

"How much do your services cost?" Ask

"What services do you offer?" Ask

"Can I learn more about a service?" Ask

Type a question... ▶

**Community** See all

Invite your friends to like this Page

6,912 people like this

6,823 people follow this

Solenn Thulliez likes this or has checked in

**About** See All

- c.10,000 comments attributed to Trusts and Locations each year.

- Quantitative score attributed to each review

- Exact date of care available

- Data can be obtained as far back as the first review

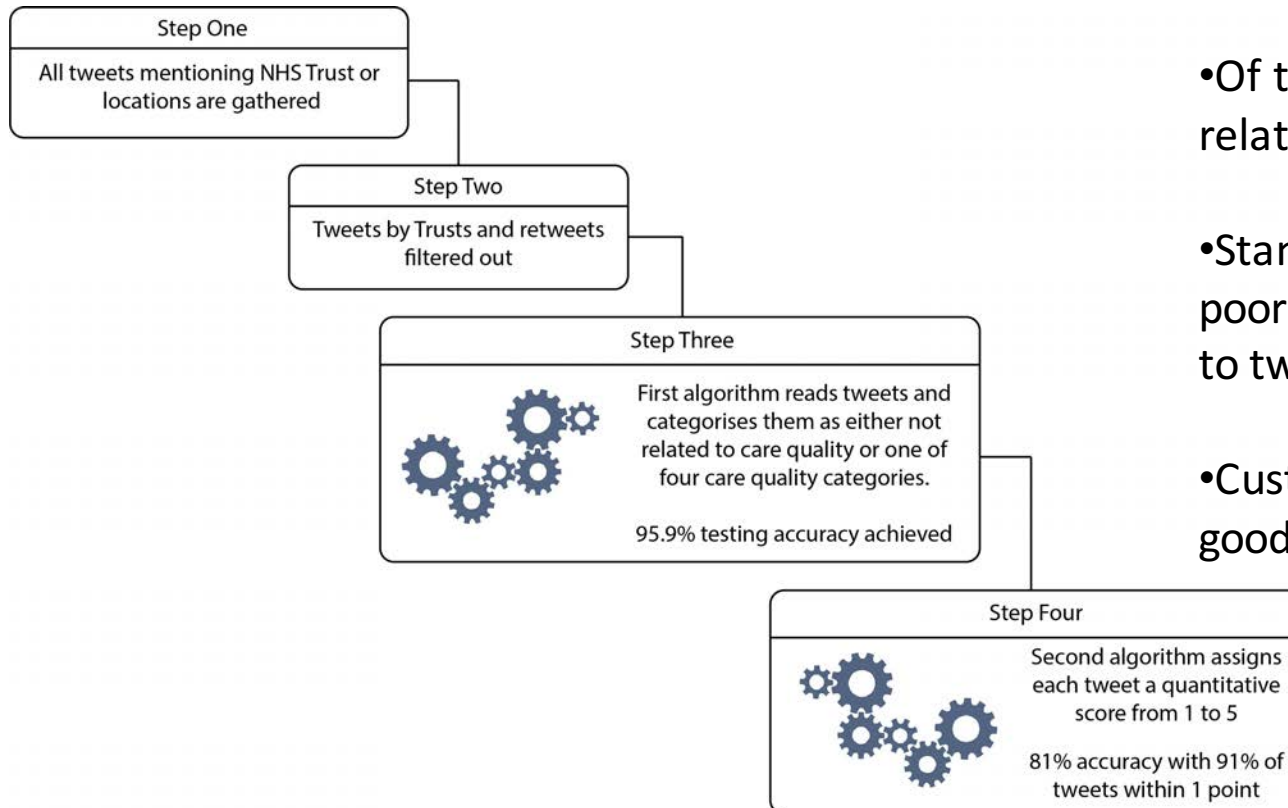
# Twitter



- c.1,100,000 tweets mentioning Trusts and locations (mostly Trusts) each year.
- Data obtained as far back as early 2016
- Majority irrelevant to the quality of care
- No quantitative score associated with a tweet
- However...



# Twitter (continued)



- Significant volume of tweets about Trusts are by Trusts, or are re-tweets

- Of the remaining tweets, c.2% relate to the quality of care

- Standard dictionaries do a very poor job of assigning sentiment to tweets

- Custom dictionary achieves good accuracy

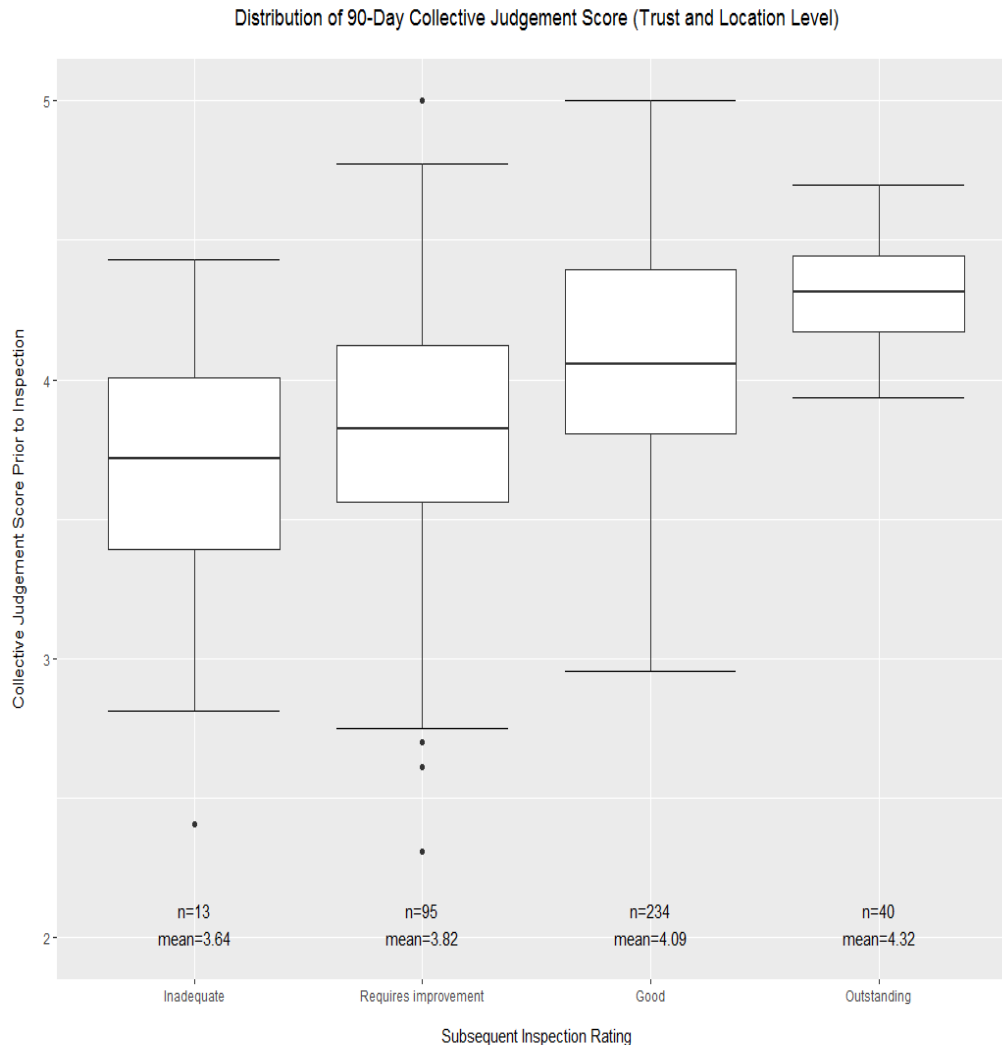
# What Have We Done With the Data?



- With the data scored on the same scale, a combined, time-limited, 'collective judgement' of service users can be calculated for any organisation on any given date.

- A 90-day 'collective judgement' contains on average:
  - 86 comments for Trusts
  - 40 comments for locations

# How Effective is it?



The moving collective judgement on the start date of inspections is a statistically-significant predictor of the outcome of those inspections.

```
call: vglm(formula = rating ~  
combinedMovAvg, family = "cumulative",  
data = combined, parallel = FALSE)
```

Coefficients:

	Estimate	Std. Error	z
value Pr(> z )			
(Intercept):1	2.2336	1.3185	
1.694	0.090251	.	
(Intercept):2	7.0067	1.1286	
6.208	5.36e-10	***	
(Intercept):3	12.7132	2.9866	
4.257	2.07e-05	***	
combinedMovAvg:1	-1.1568	0.3542	-
3.266	0.001090	**	
combinedMovAvg:2	-1.5337	0.2791	-
5.495	3.92e-08	***	
combinedMovAvg:3	-2.2796	0.6906	-
3.301	0.000964	***	

# What are the Benefits?

- ✓ Effectively prioritising inspections
- ✓ Monitor rapid decline (and improvement) in near real-time
- ✓ Exploring key issues across the sector or at specific organisations
- ✓ More granular, location-level data
- ✓ Automated – no need to gather and read through tens of thousands of comments
- ✓ Regularly updated
- ✓ Healthcare specific
- ✓ Serves as a quality improvement tool for hospitals

# Comparing Organisations

Patient Voice Tracker Compare Organisations Organisational Summary Analyse Comments

## Patient Voice

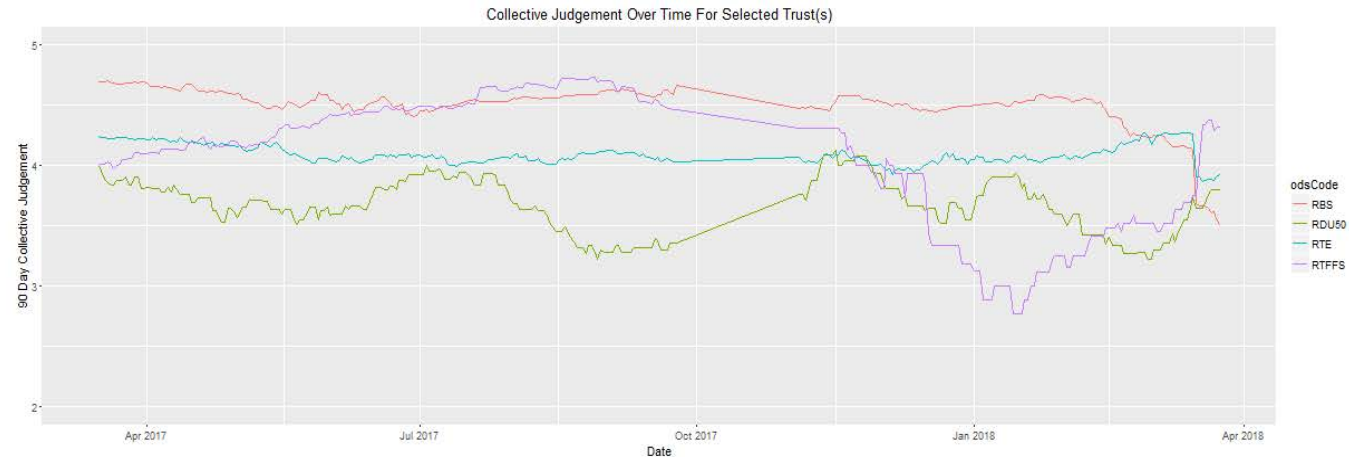
### Date range

2017-03-16 to 2018-03-24

☐ Add Smoothing Function?

### Select Organisation(s)

RBS - Alder Hey Children's NHS Foundation Trust  
RTFFS - North Tyneside General Hospital  
RDU50 - Wexham Park Hospital  
RTE - Gloucestershire Hospitals NHS Foundation Trust



Show 10 entries

Search:

Level	Parent or self	ODS code	Date posted	Comment count	Collective judgement score	Collective judgement score 30 days ago	Change in 30 days
location	RTF	RTFFS	2018-03-24	35	4.31	3.52	0.79
provider	RGQ	RGQ	2018-03-24	40	4.53	3.86	0.67
location	RVR	RVR50	2018-03-24	38	3.66	3.00	0.66
provider	RQ3	RQ3	2018-03-24	55	4.56	3.96	0.61
location	RDU	RDU50	2018-03-24	35	3.80	3.26	0.54
provider	RHM	RHM	2018-03-24	62	4.66	4.20	0.46

# Examining Individual Organisations

Patient Voice Tracker   Compare Organisations   Organisational Summary   Analyse Comments

Select Organisation

RTFFS

Word Cloud from Positive Comments



Word Cloud from Negative Comments



source	postedDate	comment	recommend
NHS Choices	2018-03-12	I visited NTGH tonight after ringing in advance to check that urgent care was open for sever pain in my daughter's foot. Arrived at the hospital at 20.20 and left at 21.42 with a clear diagnosis personally I think that is fantastic. During this time I saw	5
NHS Choices	2018-03-05	Thank you for the fabulous care I received during my hip replacement surgery on 2 March 2018. The surgery was performed by one fabulous surgeon. I was then cared for by the marvellous staff on ward 8. Everyone from the domestic staff to the nursing sister	5
Facebook	2018-02-28	Just want to applaud Rake Lane Hospital for business as usual today. Having been there twice in one day I was impressed with the cheerfulness of the staff and the smooth running of all of the services. It may have been a bit like a swan with it's feet pad	5
Facebook	2018-02-27	Excellent team on surgical day care. Skilled and compassionate. Thank you for your help and support, you were all fabulous.	5
Facebook	2018-02-24	My rating is 5* it says I loved it but under the circumstances I didn't! My Mam Margaret stonebanks worked in this hospital for a fair few years until she sadly was diagnosed with lung cancer in 2013 which had spread to her brain. After many months of tre	5
NHS Choices	2018-02-23	I attended with worsening ankle pain having been unable to secure a GP appointment until the following week. The receptionist was polite and professional whilst taking my details. The nurse attending to me was caring, respectful and knowledgeable. She lis	5
NHS Choices	2018-02-20	My wife attended today for a spinal nerve block injection. On arrival the hospital we were impressed on how bright/clean and airy the	5

# Exploring Sector-Wide Issues

Patient Voice Tracker   Compare Organisations   Organisational Summary   Analyse Comments

Choose comment source:

All - Combined

Date range

2015-07-01

to

2018-03-27

source	postedDate	comment	recommend	odsCode
Twitter	2018-03-12	My mum went into a nursing home today. Vascular Dementia. She's 72. The nurse and staff at Clatterbridge are amazing and caring, the staff at the council funded nursing home are warm, hard working and sensitive. I don't feel worthy. @CCCNHS #dementia #NHS	5	REN
Facebook	2018-03-07	I've just found out that my 91 year old grandmother who has severe dementia has been moved to a home without telling the family or next of kin. I'm utterly disgusted. Is this all for the sake of a bed? She's still a human being and she's being treated lik	1	RNL
NHS Choices	2018-03-05	Attended the oral and maxillofacial department today with my elderly father to have 2 teeth removed. The dentist and his colleague were patient and understanding with my dad who has dementia. They treated him with dignity and respect at all times and ens	5	RBL14
NHS Choices	2018-03-05	Attended the oral and maxillofacial department today with my elderly father to have 2 teeth removed. The dentist and his colleague were patient and understanding with my dad who has dementia. They treated him with dignity and respect at all times and ens	5	RBL
NHS Choices	2018-03-04	This is me a practical tool for people with dementia , If used it can help provide information of how to communicate with the person their likes dislikes etc if read.Sadly in my experience this never happened . My father was admitted to hospital on the	4	RBL14
NHS Choices	2018-03-04	Attended phlebotomy clinic on Friday 16 February 2018. Had to take 93 year old mother with me as she has advanced dementia. I could hardly walk as had seriously inflamed and swollen knee. My GP wanted blood test to determine if it was gout or a flare up o	1	RJZ70
NHS Choices	2018-03-04	This is me a practical tool for people with dementia , If used it can help provide information of how to communicate with the person their likes dislikes etc if read.Sadly in my experience this never happened . My father was admitted to hospital on the	4	RBL
NHS Choices	2018-03-04	Attended phlebotomy clinic on Friday 16 February 2018. Had to take 93 year old mother with me as she has advanced dementia. I could hardly walk as had seriously inflamed and swollen knee. My GP wanted blood test to determine if it was gout or a flare up o	1	RJZ
source	postedDate	Dementia	recommend	odsCode

Showing 1 to 25 of 835 entries (filtered from 250,077 total entries)

Previous 1 2 3 4 5 ... 34 Next

