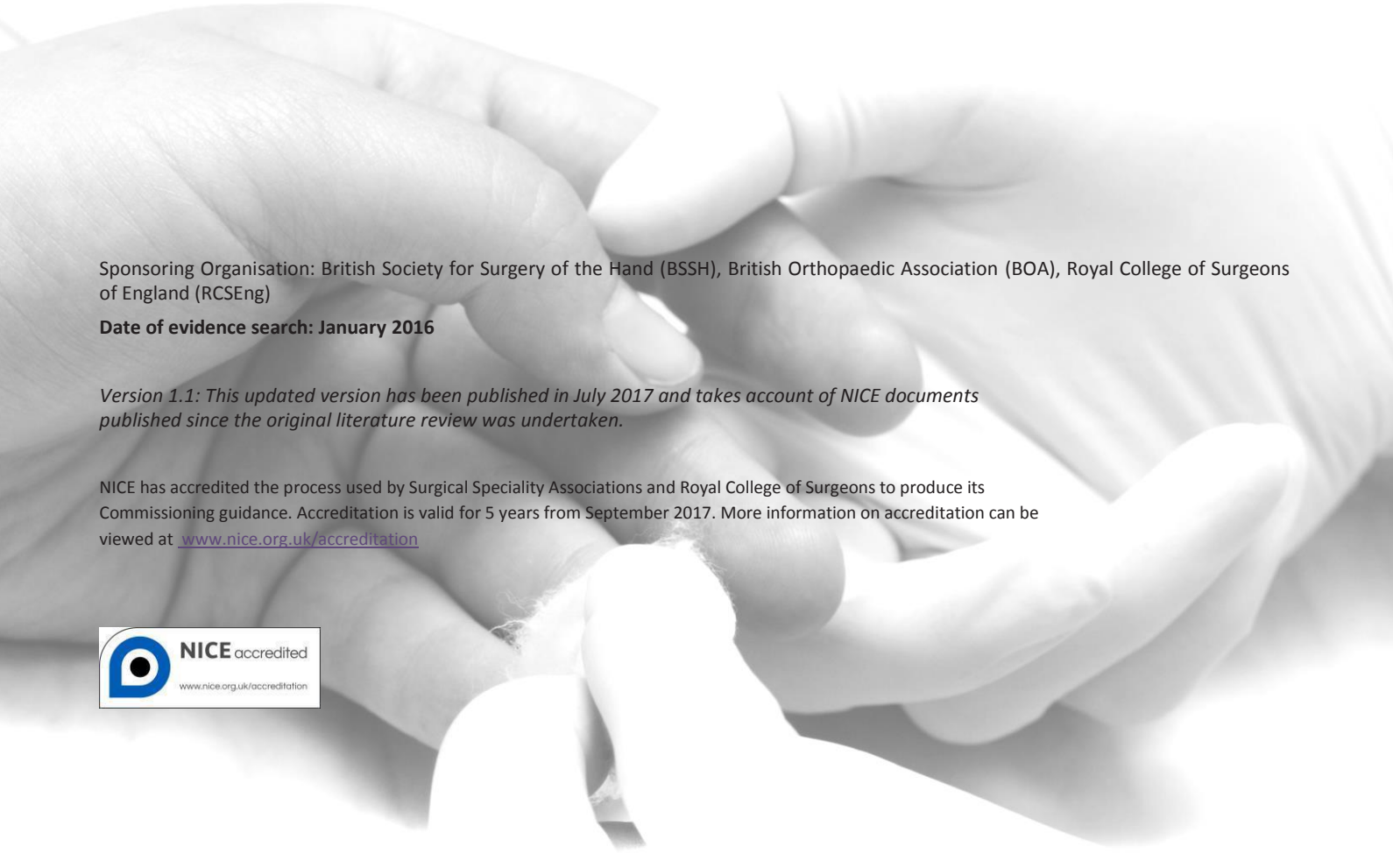
2017

Commissioning Guide:

Treatment of Carpal Tunnel Syndrome



Sponsoring Organisation: British Society for Surgery of the Hand (BSSH), British Orthopaedic Association (BOA), Royal College of Surgeons of England (RCSEng)

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Version 1.1: This updated version has been published in July 2017 and takes account of NICE documents published since the original literature review was undertaken.

NICE has accredited the process used by Surgical Speciality Associations and Royal College of Surgeons to produce its Commissioning guidance. Accreditation is valid for 5 years from September 2017. More information on accreditation can be viewed at www.nice.org.uk/accreditation

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Introduction

This guidance addresses the management of carpal tunnel syndrome. It needs timely treatment to prevent avoidable, irreversible and disabling loss of feeling and power.

For the purposes of differential diagnosis, when patients present with non-traumatic painful tingling of the fingers, the following should be considered alongside carpal tunnel syndrome:

- Cubital tunnel syndrome
- Cervical nerve root entrapment

Carpal tunnel syndrome occurs when the median nerve is compressed at the wrist in the carpal tunnel.

This is the commonest form of nerve entrapment. The prevalence of carpal tunnel syndrome in the UK is 7–16%.

A UK General Practice Research Database found that 88 men and 193 women present as new cases per 100,000 population, per year (1). Other peripheral neuropathies may coincide with carpal tunnel syndrome, and diabetes is a common co-morbidity.

Carpal tunnel syndrome is normally diagnosed in primary care and early management is usually non-surgical, whilst severe cases require surgery early

In secondary care, 52996 procedures are undertaken annually (2).

The surgical decompression rate is 43–74 per 100,000 (3).

The proportion of carpal tunnel release procedures undertaken as day cases varies between 96.69% (4) and 99% (5).

Cubital tunnel syndrome (6), with tingling of the little and ring finger, is the second most common nerve entrapment in the upper limb and can rapidly weaken hand grip.

It occurs in 25 men and 19 women per 100,000 population each year (1).

1 High Value Care Pathway for Carpal Tunnel Syndrome

Carpal tunnel syndrome and cubital tunnel syndrome are the most common causes of tingling.

Carpal tunnel syndrome occurs due to compression of the median nerve at the wrist which causes changes in feeling of the thumb, index, middle and radial half of the ring finger.

Cubital tunnel syndrome occurs due to compression of the ulnar nerve at the elbow which causes changes in feeling of the little and ulnar half of the ring finger, with weakness of small muscles of the hand but not the thumb.

1.1 Primary Care

Assessment

Mild

- History
  - Intermittent paraesthesia in the correct distribution.
  - Nocturnal symptoms (or pain/paraesthesia exacerbated at night).
- Examination
  - Subjective sensory impairment in the correct distribution in more severe cases.
  - Subjective weakness in the thumb/loss of co-ordination.
- Investigation
  - Nerve Conduction Studies (NCS) are typically not indicated (7); they should be used under the conditions set out in secondary care section.
  - Blood test is only needed if the history and examination suggests a specific secondary cause, e.g. Hypothyroidism, rheumatoid arthritis.

Red flags may include:

- Fracture,
- Onset of tingling/ numbness after injury
- Nerve tumour, tumour

Yellow flags, urgent referral (<2/52):

- Neurological diseases
- Active inflammatory joint disease (including gout and RA)
- Peripheral limb ischaemia (thoracic outlet syndrome or Raynaud's disease)
- Cervical nerve root entrapment

This should result in referral to secondary care: including orthopaedic or hand surgeons, or rheumatology.

Management

- Providers must adopt a shared decision making model, define treatment goals and take into account the patient's personal circumstances.
- Offer verbal and written information about condition to aid shared decision making in a way that is sensitive to health literacy issues.[1]
- Patients with mild carpal tunnel syndrome can be treated with a trial of conservative management by General Practitioners or a multidisciplinary team.
- Failure of one conservative treatment is seemingly a predictor that others will also fail (8). As such, no more than two modalities of conservative treatment should be used to avoid the risk of surgery being inappropriately delayed.
- Median or ulnar nerve immobilisation techniques:
    - Wrist splints (wrist in neutral) at night for Carpal Tunnel Syndrome (11) (12). To be used as an initial treatment and not to be over-relied on, due to limited effectiveness.
    - A single steroid (13) (14) (15) (16) + local anaesthetic injection.
- Patients with a potential reversible cause (pregnancy, hypothyroidism) can be considered for conservative treatment.
- Patients with mild carpal or cubital tunnel syndrome should be improved in up to 6 weeks of such management.
  There is no convincing evidence to support the use of non-conventional conservative treatments e.g. Laser treatment (9) and acupuncture (10).

Refer to intermediate provider

- Where management listed under intermediate care cannot be delivered in primary care within the local health economy.
- Moderate deteriorating symptoms.
- Functional impairment.

Refer to secondary care provider

- Persistent symptoms and disability not responding to up to 6 weeks of evidence based non-surgical treatments (8) (14).
- Sudden and severe symptoms.

1.2 Intermediate Care[2]

Assessment

- History
    - As above and rule out red flags
    - Moderate
        - Intermittent paraesthesia in the correct distribution
        - Regular night waking
        - NO persistent hypoesthesia

[1] Up to 61% of working adults do not understand health information, such as patient information leaflets (Rowlands et al). Consider using information produced by Information Standard Members and methods to address limited health literacy described in the AHRQ Health Literacy Universal Precautions Toolkit).

[2] Those services that do not require the resources of a general hospital, but are beyond the scope of the traditional primary care team (René JFM, Marcel GMOR, Stuart GP, et al. What is intermediate care? BMJ 2004; 329(7462):360-61).

- Examination
  - As above
  - Vibration sense may be reduced
  - Objective but mild weakness of the thenar muscles
- Investigation
  - NCS not routinely needed
  - "Routine blood tests" rarely contribute to management

Management

Providers must adopt a shared decision making model, define treatment goals and take into account the patient's personal circumstances. Offer verbal and written information about condition to aid shared decision making in a way that is sensitive to health literacy issues.[3]

- Splints at night
- Single steroid + local anaesthetic injection if (13) (14):
  - Not already given in Primary care
  - Painful reversible paraesthesia not helped by splints
    Or when
  - Diagnosis is uncertain
  - Surgery cannot be undertaken safely, or patient opts not to have surgery

Physiotherapy

- Median or ulnar (17) nerve mobilisation techniques.

Refer to secondary care provider

- Moderate to severe or deteriorating symptoms.
- Daily symptoms, frequent night waking.
- Persistent symptoms causing functional impairment not responding to up to 12 weeks of evidence based non-surgical treatments; this time to include any treatment received in primary care. Note there is a growing body of evidence emphasising the need to avoid inappropriate delay in referral (8) (14) (18) (19).
- Patients with moderate or severe carpal tunnel should be considered for surgery (open or endoscopic).
- Where conservative management has failed and surgical treatment is considered
  - Surgical outcomes may be poorer after long periods of persistent symptoms (20) (21).
- Patients who are not suitable for surgery or have decided not to have surgery should be offered an appropriate care package.

[3] Up to 61% of working adults do not understand health information, such as patient information leaflets (Rowlands et al). Consider using information produced by Information Standard Members and methods to address limited health literacy described in the AHRQ Health Literacy Universal Precautions Toolkit).

1.3 Secondary Care

Assessment

- History
  - As above, confirm diagnosis
  - Check for red and yellow flags
  - Severe involvement
    - Persistent paraesthesia in the correct distribution
    - Persistent numbness and weakness in the correct distribution

- Examination
  - Vibration and 2-point discrimination reduced (testing optional)
  - Objective weakness of the thenar muscles
  - Wasting of the thenar eminence

- Investigation
  - Nerve Conduction Studies (NCS) done for
    - Equivocal clinical examination and history
    - Persistent or recurrent carpal tunnel syndrome
    - An unclear diagnosis suggesting peripheral neuropathy

Management

Providers must adopt a shared decision making model, define treatment goals and take into account the patient's personal circumstances, all alternatives MUST be discussed. Offer verbal and written information about condition to aid shared decision making in a way that is sensitive to health literacy issues.[4]

Carpal or cubital (22) (23) tunnel decompression (13) (14):

- Surgical decompression can be undertaken either by an open or keyhole technique.
- The potential value of endoscopic procedures over open procedures (or vice-versa) remains unproven and is the subject of on-going research (24) (25) (26) (27). There is, however, emerging evidence of better outcomes in the short term when endoscopic procedures are used (28).
- Endoscopic procedures also may result in greater patient satisfaction (29) although there is no definitive evidence that the outcome is any different to open decompression. Endoscopic procedures may be more costly.
- Open surgery is recommended for elderly patients and patients with multiple co-morbidities.

- Surgery should be performed:
  - In an appropriate sterile operating room.

[4] Up to 61% of working adults do not understand health information, such as patient information leaflets (Rowlands et al). Consider using information produced by Information Standard Members and methods to address limited health literacy described in the AHRQ Health Literacy Universal Precautions Toolkit).

- As a day case in an ambulatory or in-patient facility, unless clinical or social circumstances dictate otherwise eg. A General Practice Surgery has a room approved for minor procedures.

- Under the supervision of a consultant surgeon who is competent to perform the surgery; supervision need only consist of annual review by a consultant surgeon based on outcome and any other audit data

- Under local or regional anaesthetic, although general anaesthetic may be needed occasionally and for ulnar nerve surgery.

Patients should be informed that the decision to have surgery can be a dynamic process and a decision to not undergo surgery does not exclude them from having surgery at a future time point.

Urgent surgery is indicated where there is:

- Clinical evidence of recent denervation with persistent altered feeling.

- Sudden progression of symptoms.

- Risk of permanent irreversible nerve damage.

Other cases may be treated as routine within an 18-week framework.

Follow-up

- Patients will ordinarily require 1 follow up appointment, but there may be a clinical need for further appointments, which may be virtual.

- Identify a small minority of patients who will need hand therapy.

- Identify and manage early

    - CRPS

    - Sensitive scar

    - Nerve damage

Care is predominantly provided by a secondary care provider, with potential for provision of surgery in other settings where appropriate facilities are available, including access to hand therapy and appropriate nursing support.

The impact of use of independent sector providers on training and the stability of the hand unit as a whole should be considered when commissioning.

Recurrence rates after carpal tunnel decompression are between 0.3 and 12% (31). Where complications arise, principles of continuity of care should be applied, allowing referral back to the original surgical team.

Secondary Care: Specialised Surgery

Refer to specialised secondary care provider:

- Sudden severe symptoms
- Marked weakness with function deficit which may need reconstructive surgery such as tendon transfers
- CRPS 1 not resolving in a fortnight
- Nerve injury
- Recurrent or persistent tingling after decompression

2 Procedures Explorer for Carpal Tunnel Syndrome

http://rcs.methods.co.uk/pet.html

The Procedures Explorer offers clinicians and commissioners an opportunity to identify variation and take action to reduce "variation in the use of health care services that cannot be explained by variation in patient illness or patient preferences" (32). This tool covers interventions for conditions related to carpal tunnel syndrome, grouped under the phrase "painful tingling fingers", as well as carpal tunnel syndrome itself.

The Procedures Explorer Tool is available via the Royal College of Surgeons website.

The Procedures Explorer for treatment of painful tingling fingers describes variation in:

Procedure	OPCS4 codes*	Exclusions
Carpal tunnel decompression	A651 ICD10 G560	
Revision carpal tunnel decompression	A691-2 with site code Z092	
Cubital tunnel decompression	A671, A678+Z094, A733+Z094	
Ulnar nerve anterior transposition	A681, A683+Z094	
Revision ulnar nerve surgery	A682, A685, A691, A698, A699, with Z094 as needed ICD10 G562	

3 Quality Dashboard for Carpal Tunnel Syndrome

The quality dashboard provides an overview of activity commissioned by CCGs from the relevant pathways, and indicators of the quality of care provided by surgical units. This tool covers interventions for conditions related to carpal tunnel syndrome, grouped under the phrase “painful tingling fingers”, as well as carpal tunnel syndrome itself.

The quality dashboard is available via the Royal College of Surgeons website.

For the current dashboard indicators (see appendix 1)

Measure	Definition	Data Source*
1. Standardised activity rate	Activity rate standardised for age and sex	HES/Quality Dashboard appendix 1
2. Average length of stay	Total spell duration/total number of patients discharged	HES/Quality Dashboard appendix 1
3. Day case rate	Number of patients admitted and discharged on the same day/total number of patients discharged	HES/Quality Dashboard appendix 1
4. Short stay rate	Number of patients admitted and discharged within 48 hours/total number of patients discharged	HES/Quality Dashboard appendix 1
5. 7/30 day readmission rate	Number of patients readmitted as an emergency within 7/30 days of discharge/total number of patients discharged Excludes cancer, dementia, mental health	HES/Quality Dashboard appendix 1
6. Reoperations within 30 days/1 year	Number of patients re-operated during an emergency readmission within 30 days/1 year/total number of patients discharged	HES/Quality Dashboard appendix 1
7. In hospital mortality rate	Number of patients who die while in hospital/total number of patients discharged	HES/Quality Dashboard appendix 1

* Includes data from HES, National Clinical Audits, registries

4 Levers for Implementation

4.1 Audit and Peer Review Measures

Levers for implementation are tools for commissioners and providers to aid implementation of high value care pathways.

Measure	Standard	Data source
Levine Scale	Levine Scale	PROM
Patient Evaluation Measure	Patient Evaluation Measure	PROM
Revision rate after surgery	The number of procedures that required revision surgery within an agreed time (e.g. 1 year)	HES
Complication rate	Define common complications to include nerve injury, CRPS 1*	HES, CUSUM

*CRPS 1 Complex Regional Pain Syndrome type 1 (Algodystrophy).

4.2 Quality Specification/CQUIN (Commissioning for Quality and Innovation)

Measure	Description	Data source
1 Day case rate	98%	HES, Dashboard
2 Local anaesthetic rate	Proportion of procedures carried out under local anaesthetic	
3 Revision rate	Rate/100,000 population	HES, Dashboard
4 Time off work	% off work > 2 weeks	

5 Directory

5.1 Patient Information for Carpal Tunnel Syndrome

Links to patient information and shared decision making tools

Name	Publisher	Link
Carpal tunnel syndrome	British Society for Surgery of the Hand	http://www.bssh.ac.uk/patients/commonhandconditions/carpaltunnelsyndrome
Carpal tunnel syndrome	Patient.co.uk	http://www.patient.co.uk/health/Carpal-Tunnel-Syndrome.htm
Carpal tunnel syndrome	NHS Choices	http://webarchive.nationalarchives.gov.uk/+/www.nhs.uk/conditions/carpal-tunnel-syndrome/pages/whatisitfinal.aspx

Carpal tunnel syndrome	Arthritis Research UK	http://www.arthritisresearchuk.org/arthritis-information/conditions/carpal-tunnel-syndrome.aspx
Carpal tunnel syndrome	BMJ	http://bestpractice.bmj.com/best-practice/pdf/patient-summaries/531940.pdf
Carpal tunnel syndrome	East Kent Hospitals University NHS Foundation Trust	www.carpal-tunnel.net

5.2 Clinician Information for Carpal Tunnel Syndrome

Name	Publisher	Link
Quality standard for CTS	British Society for Surgery of the Hand	Updated link TBC

6 Benefits and Risks

Benefits and risks of commissioning the pathway are described below:

Consideration	Benefit	Risk
Patient outcome	Ensures access to prompt and effective therapy	Prolonged treatment with patients disabled and dependent, who are unable to work if of working age, irreversible changes in the nerve
Patient safety	Reduces chance of missing serious nerve pathology Avoids delay in decompressing nerve	
Patient experience	Improves access to patient information	Patients not taking charge of their care, dependence on primary and secondary care
Equity of access	Improves access to effective procedures	Withholding of access for financial reasons alone, irreversible changes in the nerve with prolonged or permanent disability
Resource impact	Reduces unnecessary investigation (blood tests, Neurophysiology), referral (in early disease) and intervention	Resource required to establish effective providers

7 Further Information

7.1 Research Recommendations

- Costs and numbers of patients who have injections / splinting and are then referred.
- The use of patient based questionnaire that quantify severity of symptoms and changes with treatment.
- Identification of patients who would benefit from post-operative hand therapy.
- Accuracy of web-based questionnaires for diagnosis of carpal tunnel syndrome.

7.2 Evidence Base

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7.3 Guide Development Group for Carpal Tunnel Syndrome

A commissioning guide development group was established to review and advise on the content of the commissioning guide, as part of the review process. This group met on a number of occasions via teleconference, with additional interaction taking place via email. Details of the Guide Development Group involved in the original production of the guide is available on request.

Name	Job Title/Role	Affiliation
Ian Trail (Chair)	Consultant Trauma & Orthopaedic Surgeon President British Society for Surgery of the Hand	British Society for Surgery of the Hand
David Clark	Consultant Orthopaedic Surgeon	British Orthopaedic Directors Society
Robert Freeman	Consultant Orthopaedic Surgeon and CCG Governing Body Member (Secondary Care Consultant)	Walsall CCG
Kate Roxburgh	Patient	BOA PLG
Zoe Clift	Extended Scope Practioner (Hand Therapy); Derby Teaching Hospitals NHS Foundation Trust	British Association of Hand Therapists (Former Chair)
Morag Fox	Patient	
Dr Naveed Akhtar	General Practitioner and Commissioner GPwSI Hand Surgery	West Essex CCG Mid Essex Trust

7.4 Funding Statement

The development of this commissioning guide has been funded by the following sources:

- The Royal College of Surgeons of England and the British Orthopaedic Association provided staff to support the guideline development.

7.5 Methods Statement

The development of this guidance has followed a defined, NICE Accredited process. This included a systematic literature review, public consultation and the development of a Guidance Development Group which included those involved in commissioning, delivering, supporting and receiving surgical care as well as those who had undergone treatment. An essential component of the process was to ensure that the guidance was subject to peer review by senior clinicians, commissioners and patient representatives.
Details are available at this site: http://www.rcseng.ac.uk/healthcare-bodies/nscc/commissioning-guides

7.6 Conflict of Interest Statement

Individuals involved in the development and formal peer review of commissioning guides are asked to complete a conflict of interest declaration. It is noted that declaring a conflict of interest does not imply that the individual has been influenced by his or her secondary interest, but this is intended to make interests (financial or otherwise) more transparent and to allow others to have knowledge of the interest.

Appendix 1: Dashboard

To support the commissioning guides the Quality Dashboards show information derived from Hospital Episode Statistics (HES) data. These dashboards show indicators for activity commissioned by CCGs across the relevant surgical pathways and provide an indication of the quality of care provided to patients.

The dashboards are supported by a meta data document to show how each indicator was derived.

http://rcs.methods.co.uk/dashboards.html

Example CCG:

Orthopaedics-Tingling Fingers

Carpal Tunnel

Metric	Period	Value	Mean	Chart	Trend
Age/Sex Standardised Activity (per 100,000 population)	RY Q4 1213	84.84	87.99		
Average Length of Stay (Days)	RY Q4 1213	0.01	0.04		
7 Day Readmission Rate (%)	RY Q4 1213	0.00	0.35		
30 Day Readmission Rate (%)	RY Q4 1213	0.00	1.13		
30 Day Reoperation Rate (%)	RY Q4 1213	0.00	0.60		
Daycase Rate (%)	RY Q4 1213	99.34	98.39		
In Hospital Mortality Rate (per 1,000 discharges)	RY Q4 1213	0.00	0.00		

Cubital Tunnel

Metric	Period	Value	Mean	Chart	Trend
Age/Sex Standardised Activity (per 100,000 population)	RY Q4 1213	14.50	13.28		
Average Length of Stay (Days)	RY Q4 1213	0.15	0.17		
7 Day Readmission Rate (%)	RY Q4 1213	0.00	0.23		
30 Day Readmission Rate (%)	RY Q4 1213	0.00	0.75		
30 Day Reoperation Rate (%)	RY Q4 1213	0.00	0.41		
Daycase Rate (%)	RY Q4 1213	84.62	88.59		
In Hospital Mortality Rate (per 1,000 discharges)	RY Q4 1213	0.00	0.00		