

SUPPLEMENT

PAY-FOR-PERFORMANCE: A LEVER FOR QUALITY IMPROVEMENT IN ACUTE HOSPITALS?



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members of the KCE Expert Team make yearly declarations of interest and further details of these are available upon request.

Reported interests:

All experts and stakeholders consulted within this report were selected because of their involvement in the topic of P4P in hospitals. Therefore, by definition, each of them might have a certain degree of conflict of interest to the main topic of this report.

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Disclaimer:

- Several external experts (cf. supra) were consulted about a (preliminary) version of the scientific report. They were selected based on their expertise in the topic of this report; potential conflicts of interest were considered in this process. Their comments were discussed during meetings and/or via email. They did not co-author the scientific report and do not necessarily agree with its content.
- Subsequently, the KCE research team invited three independent experts ('validators', cf. supra), with no prior involvement in the study, to conduct a peer review of the final version of the scientific report. They were selected based on their expertise in the topic of this report; potential conflicts of interest were considered in this process. The validators decided whether or not the report was scientifically valid. They did not co-author the scientific report and did not necessarily all three agree with its content. Their name and affiliation are included in the colophon.
- Finally, this report has been approved by a majority of votes by the Executive Board.
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■ TABLE OF CONTENTS

LIST OF FIGURES	2
LIST OF TABLES.....	2
LIST OF ABBREVIATIONS.....	4
■ APPENDICES	9
1 SUPPLEMENT TO CHAPTER 3 – PAY-FOR-PERFORMANCE INCENTIVES AND QUALITY OF CARE IN ACUTE HOSPITALS: A SYSTEMATIC REVIEW	9
APPENDIX 1 PRISMA REPORTING CHECKLIST	9
APPENDIX 2 SEARCH STRATEGIES.....	14
Appendix 2.1 Embase search strategy and results	14
Appendix 2.2 Medline search strategy and results.....	15
Appendix 2.3 Econlit search strategy and results	16
Appendix 2.4 Cochrane search strategy and results.....	17
Appendix 2.5 Scopus search strategy and results	17
Appendix 2.6 Bielefeld Academic Search Engine (BASE) search strategy and results	18
APPENDIX 3 SYSTEMATIC REVIEWS CITATION SEARCHED.....	19
APPENDIX 4 EXCLUDED FULL TEXTS.....	21
APPENDIX 5 RISK OF BIAS ASSESSMENTS	33
Appendix 5.1 Risk of bias for interrupted time series studies	33
Appendix 5.2 Risk of bias for studies with a separate control group.....	35
APPENDIX 6 REGRESSION SENSITIVITY ANALYSES	38
Appendix 6.1 Outcome definition: positive and statistically significant.....	38
Appendix 6.2 One outcome per study	39
Appendix 6.3 Payment frequency grouping	40
Appendix 6.4 Risk of bias classification	41
Appendix 6.5 2-level model.....	41
APPENDIX 7 CODED MECHANISM PREVALENCE ACROSS ALL INCLUDED STUDIES..	42
APPENDIX 8 HEATMAP SHOWING MECHANISM PREVALENCE BY OVERALL STUDY OUTCOME CLASSIFICATION.....	43
APPENDIX 9 INFORMAL PROGRESS-PLUS EQUITY RELEVANT SUBGROUP IMPACTS EXAMINED BY STUDY	44
APPENDIX 10 INFORMAL COST ESTIMATES MENTIONED BY STUDIES.....	45
2 SUPPLEMENT TO CHAPTER 4 – LESSONS LEARNED FROM THE DESIGN AND IMPLEMENTATION OF FIVE P4P PROGRAMMES IN ACUTE HOSPITALS.....	46
2.1 MEDICARE HOSPITAL VALUE-BASED PURCHASING (HVBP) PROGRAMME IN THE US	46
2.1.1 Brief overview of the financing methods for acute hospitals	46



2.1.2	Objectives and rationale of the programme.....	46
2.1.3	Design	47
2.2	INCITATION FINANCIERE A L'AMELIORATION DE LA QUALITE (IFAQ) PROGRAMME IN FRANCE	61
2.2.1	Brief overview of the financing methods for acute hospitals	61
2.2.2	Objectives and rationale of the programme.....	62
2.2.3	Scope of the analysis	63
2.2.4	Design	63
2.3	CLINICAL PRACTICE IMPROVEMENT PAYMENT (CPIP) AND QUALITY IMPROVEMENT PAYMENTS (QIP) IN QUEENSLAND, AUSTRALIA	81
2.3.1	Brief overview of the financing methods for acute hospitals	81
2.3.2	Objectives and rationale of the programme.....	82
2.3.3	Design	82
2.4	COMMISSIONING FOR QUALITY AND INNOVATION (CQUIN) FRAMEWORK IN ENGLAND	95
2.4.1	Brief overview of the financing methods for hospitals.....	95
2.4.2	Objectives and rationale of the programme.....	97
2.4.3	Design	98
2.5	BEST PRACTICE TARIFFS IN ENGLAND.....	119
2.5.1	Brief overview of the financing methods for acute hospitals	119
2.5.2	Objectives and rationale of the programme.....	121
2.5.3	Design	121
■	REFERENCES	138

LIST OF FIGURES

Figure 1 – Domains assessed in the HVBP programme, 2012-2026.....	47
Figure 2 – Baseline and performance periods for the 2025-2026 HVBP programme.....	53
Figure 3 – Timeline with size of financial incentive and key changes in the CQUIN framework..	104

LIST OF TABLES

Table 1 – Indicators included in the HVBP programme 2025-2026	48
Table 2 – Indicators included in the HVBP programme, 2012-2026	50
Table 3 – Payment taxonomy framework and value-based payment targets for Medicare in 2016 and 2018	59
Table 4 – Indicators taken into account in IFAQ since 2019.....	65

Table 5 – Targets for 2025 IQSS indicators*	69
Table 6 – Minimum eligibility criteria for 2025 IQSS indicators*	71
Table 7 – Indicators and remuneration rate in IFAQ 2026	77
Table 8 – Multiplier coefficient	78
Table 9 – CPIP indicators, first pilot phase (2008-2009)	83
Table 10 – CPIP indicators, second pilot phase (2009-2010)	85
Table 11 – Quality Improvement Payments, 2013-2022	87
Table 12 – Monetary incentives in the stroke QIP programmes	89
Table 13 – Quality Improvement Payments and purchasing incentives for acute stroke care	90
Table 14 – Quality Improvement Payments and purchasing incentives for smoking cessation	90
Table 15 – Headline Performance Measures (2025/26 – 2027/28)	93
Table 16 – Payment incentives, 2022-2023	94
Table 17 – National mandated goals and indicators included in CQUIN 2023-2024 for acute and specialised acute services	100
Table 18 – National goals included in the CQUIN programme for acute services, 2009-2024 ...	101
Table 19 – National schemes / goals included in the CQUIN programme for specialised acute services, 2013-2024	106
Table 20 – Best Practice Tariffs (2010-2027)	123
Table 21 – Best Practice Tariffs in 2026/27	130



LIST OF ABBREVIATIONS

ABBREVIATION	DEFINITION
A&E	Accident and Emergency
ABP	Activity-Based Payment
ACA	Affordable Care Act
aCGH	array Comparative Genomic Hybridization
AKI	Acute Kidney Injury
AMI	Acute Myocardial Infarction
ANAP	National Agency for Performance Support – ‘ <i>Agence Nationale d’Appui à la Performance, France</i> ’
API	Aligned Payment and Incentive
AQ	Advancing Quality
AR-DRG	Australian Refined Diagnosis Related Groups
ARS	Regional Health Agency – ‘ <i>Agence régionale de santé, France</i> ’
ARV	Antiretroviral
ATIH	Technical Agency for Hospitalisation Information – ‘ <i>Agence Technique de l’Information sur l’Hospitalisation, France</i> ’
ATSI	Aboriginal and Torres Strait Islander
BASE	Bielefeld Academic Search Engine
BOAST	British Orthopaedic Association Standards for Trauma
BPT	Best Practice Tariffs
BTS	British Thoracic Society
CABG	Coronary Artery Bypass Graft
Card	Cardiac
CAUTI	Catheter-Associated Urinary Tract Infection
CBA	Controlled before-after
CCG	Clinical Commissioning Group
CDI	Clostridium Difficile Infection
CEO	Chief Executive Officer
CLABSI	Central Line-Associated Bloodstream Infection
CLTI	Chronic Limb-Threatening Ischaemia
CMS	Centers for Medicare and Medicaid Services
CNAMTS	National Health Insurance Fund – ‘ <i>Caisse Nationale d’Assurance Maladie, France</i> ’
CNS	Clinical Nurse Specialist
COPD	Chronic Obstructive Pulmonary Disease
CPIP	Clinical Practice Improvement Payment

CPOM	Multi-Year Contracts of Objectives and Means – ‘ <i>Contrats Pluriannuels d’Objectifs et de Moyens, France</i> ’
CQC	Care Quality Commission
CQUIN	Commissioning for Quality and Innovation
CRG	Clinical Reference Group
CTM	Care Transition Measure
CUR	Clinical Utilisation Review
DGOS	Ministry of Health – ‘ <i>Direction générale de l’offre de soins</i> ’
DHSC	Department of Health and Social Care
DNS	Digital Health Directorate – ‘ <i>Direction du Numérique en Santé, France</i> ’
DQIP	Data Quality Improvement Plan
DREES	Directorate of Research, Studies, Evaluation and Statistics – ‘ <i>Direction de la Recherche, des Etudes, de l’Evaluation et des Statistiques, France</i> ’
DRG	Diagnosis Related Group
EACV	Estimated Annual Contract Value
ED	Emergency Department
GHM	Homogeneous Patient Groups – ‘ <i>Groupes Homogènes de Malades, France</i> ’
GHS	Homogeneous Groups of Stays – ‘ <i>Groupes Homogènes de Séjours, France</i> ’
GIRFT	Getting It Right First Time
GP	General Practitioner
HAC	Hospital-Acquired Complication or Hospital-Acquired Condition
HAC-POA	Hospital-Acquired Condition Present on Admission
HACR	Hospital-Acquired Conditions Reduction
HACRP	Hospital-Acquired Condition Reduction Program
HAD	Hospital At Home – ‘ <i>Hospitalisation À Domicile, France</i> ’
HAS	French National Authority for Health – ‘ <i>Haute Autorité de Santé, France</i> ’
HCAHPS	Hospital Consumer Assessment Healthcare Providers and Systems
HEA	Health Equity Adjustment
HES	Hospital Episode Statistics
HF	Heart Failure
HHS	Hospital and Health Services
HHVBP	Home Health Value-Based Purchasing
HITH	Hospital in the Home
HIV	Human Immunodeficiency Virus



HQID	Hospital Quality Incentive Demonstration
HRG	Health Resource Group
HRR	Hospital Readmission Reduction
HRRP	Hospital Readmissions Reduction Program
HVBP	Hospital Value-Based Purchasing
ICB	Integrated Care Board
ICS	Integrated Care System
IFAQ	Financial Incentives for Quality Improvement – <i>‘Incitation Financière à l’Amélioration de la Qualité, France’</i>
IGAS	General Inspectorate of Social Affairs – <i>‘Inspection générale des affaires sociales, France’</i>
IMM	Immunisation
Inf	Infection
IPPS	Inpatient Prospective Payment System
IQR	Inpatient Quality Reporting
IQSS	Healthcare Quality and Safety Indicators – <i>‘Indicateurs de Qualité et de Sécurité des Soins, France’</i>
ISS	Injury Severity Score
ITS	Interrupted Time Series
LOS	Length of Stay
KPI	Key Performance Indicator
LVA	Low volume activity
MCO	Hospitals providing Medical, Surgical, and Obstetrical care – <i>‘Etablissements de Médecine-Chirurgie-Obstétrique, France’</i>
MRSA	Methicillin-Resistant Staphylococcus Aureus
MS-DRG	Medicare Severity Diagnosis Related Group
MSPB	Medicare Spending Per Beneficiary
MTC	Major Trauma Centre
NA	Not Appropriate
NEAT	National Emergency Access Target
NEST	National Elective Surgery Target
NEWS2	National Early Warning Score 2
NHS	National Health Service
NHSE	National Health Service England
NHSPS	National Health Service Payment Scheme
NICE	National Institute for Health and Care Excellence
NIHR	National Institute for Health and Care Research

NJR	National Joint Registry
NPDA	National Paediatric Diabetes Audit
NQF	National Quality Forum
NR	Non Respondent
NSCLC	Non-Small-Cell Lung Cancer
NSTEMI	Non-ST segment elevation myocardial infarction
NTPS	National Tariff Payment System
ODN	Operational Delivery Network
ONIC	National Inspection-Control Priorities – ‘ <i>Orientations Nationales d’Inspection-Contrôle, France</i> ’
P4P	Pay-for-performance
P4Q	Pay-for-quality
PAMA	Protecting Access to Medicare Act
PbR	Payment by Results
PC	Perinatal Care
PCR	Polymerase Chain Reaction
PCT	Primary Care Trust
PI	Purchasing Incentive
PMSI	Programme for the Medicalisation of Information Systems – ‘ <i>Programme de Médicalisation des Systèmes d’Information, France</i> ’
PN	Pneumonia
PREM	Patient-Reported Experience Measure
PRISMA	Preferred Reporting Items for Systematic reviews and Meta-Analyses
PROGRESS-PLUS	Place, Race, Occupation, Gender, Religion, Education, Socioeconomic status, Social capital, personal characteristics associated with discrimination, features of relationships and time-dependent relationships
PROM	Patient-Reported Outcome Measure
PSI	Patient Safety Indicator
PSRE	Patient Safety Risk Event
PSS	Prescribed Specialised Services
PSS CQUIN	Prescribed Specialised Services Commissioning for Quality and Innovation
PVBM	Physician Value-Based Modifier
QBR	Quality Based Reimbursement
QIP	Quality Improvement Payment
QS	Quality Score



RAG	Red-Amber-Green
RoB	Risk of Bias
RPRP	Right Procedure Right Place
RPV	Renal Patient View
RSA	Remuneration Score based on the Achievement
RSE	Remuneration Score based on the Evolution
RSI	Remuneration Score for the Indicator
SACT	Systemic Anti-Cancer Therapy
SCIC	Spinal Cord Injury Centre
SCIP	Surgical Care Improvement Project
SD	Standard Deviation
SDEC	Same-Day Emergency Care
SDIP	Service Development and Improvement Plan
SEP	Sepsis
SES	Socioeconomic Status
SNF VBP	Skilled Nursing Facility Value-Based Purchasing
SSI	Surgical Site Infection
STEMI	ST-Elevation Myocardial Infarction
TARN	Trauma Audit and Research Network
TPN	Total Parenteral Nutrition
TPS	Total Performance Score
UEC	Urgent and Emergency Care
UK	United Kingdom
US	United States
UTI	Urinary Tract Infection
VTE	Venous-Thromboembolism



■ APPENDICES

1 SUPPLEMENT TO CHAPTER 3 – PAY-FOR-PERFORMANCE INCENTIVES AND QUALITY OF CARE IN ACUTE HOSPITALS: A SYSTEMATIC REVIEW

Appendix 1 PRISMA reporting checklist

Unless otherwise indicated, all page numbers in the table below refer to the [Scientific Report](#).

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	Chapter title, p.20
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	Key Points box, p.20-21
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	Introduction, p.22
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	Introduction (RQ1–RQ3), p.22
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	Methods – Eligibility criteria, p.23-24; grouping for synthesis p.25-26
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	Methods – Information sources, p.22 (search dates Oct 2025); full strategies Appendix 2 in Supplement 1, p.14-18



Section and Topic	Item #	Checklist item	Location where item is reported
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Methods – Search Strategy, p.22; full strategies Appendix 2 in Supplement 1, p.14-18
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	Methods – Study records / Selection process, p.25
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	Methods – Data extraction, p.25-26
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	Methods – Eligibility criteria - Outcomes, p.24; Data extraction, p.25-26
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	Methods – Data extraction, p. 25-26
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	Methods – Risk of bias in individual studies, p.26
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	Methods – Data synthesis, p.26-27
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	Methods – Data synthesis, p.26-27
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	Methods – Data for the quantitative synthesis, p.27
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	Methods – Data synthesis, p.26-27, 29-30

Section and Topic	Item #	Checklist item	Location where item is reported
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	Methods – Data synthesis – Analytical approach, p.27-28; Programme theory p.29-30
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	Methods – Data synthesis – Analytical approach, p.27-28
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	Methods – Data synthesis – Sensitivity and robustness analyses, p.28-29
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	Noted in limitations, Discussion p.44
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	Certainty noted narratively, Discussion p.59
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	Results – Search results & Figure 2, p.31-32
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	Results – Search results, p.31; Appendix 4 in Supplement 1, p.21-32
Study characteristics	17	Cite each included study and present its characteristics.	Results – Summary by programme & Table 2, p.32-35
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Results – Quality appraisal, p.31; Appendix 5 in Supplement 1, p.33-37



Section and Topic	Item #	Checklist item	Location where item is reported
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	Results by programme, p.36-42; Table 3, p.43-44
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	Results – Quality appraisal p.31 & descriptive analysis, p.42-43
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	Results – Regression analysis & Table 4, p.44-46; vote counting Table 3, p.43-44
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	Results – Regression analysis, p.44-46; Programme theory, p.46-54
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	Results – Sensitivity analysis, p.46; Appendix 6 in Supplement 1, p.38-41
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	Not formally reported (publication bias discussed narratively, Discussion p.57)
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	Not formally reported (certainty discussed narratively, p.58)
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	Discussion – Summary of findings & Findings in context, p.56-59
	23b	Discuss any limitations of the evidence included in the review.	Discussion – Strengths and limitations, p.59

Section and Topic	Item #	Checklist item	Location where item is reported
	23c	Discuss any limitations of the review processes used.	Discussion – Strengths and limitations, p.59
	23d	Discuss implications of the results for practice, policy, and future research.	Discussion, p.56-59 (implications throughout)
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	Methods, p.22 (PROSPERO: CRD420251178733)
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	Methods, p.22 (PROSPERO: CRD420251178733)
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	Methods, p.22, footnote a (RQ wording refinement)
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	Reported at front of report in Colophon
Competing interests	26	Declare any competing interests of review authors.	Reported at front of report in Colophon
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	Data extraction form piloted (p.25-26); extracted data in Supplement 2 & referenced on p.26, 30, 49, 51.



Appendix 2 Search strategies

Appendix 2.1 Embase search strategy and results

Search date: 11/10/2025

#	Query	Results
1	(P4P or P4Q).ab,ti,kf.	792
2	(nonpayment or non payment).ab,ti,kf.	264
3	((pay* or incentiv* or fee? or remunerat* or compensat* or purchas* or financ* or fund* or monetary or bonus* or penalt*) adj3 (performance? or quality or result? or output? or value or merit? or target*)).ab,ti,kf.	62269
4	or/1-3	62684
5	hospital*.ti,ab,kf.	3127643
6	inpatient*.ti,ab,kf.	289693
7	secondary care.ti,ab,kf.	18598
8	(intensive care or ICU care).ti,ab,kf.	352778
9	critical care.ti,ab,kf.	89214
10	day surger*.ti,ab,kf.	6012
11	day care.ti,ab,kf.	12168
12	emergency care.ab,ti,kf.	21176
13	exp Hospitals/	1761085
14	exp Inpatients/	262709
15	exp Day care, Medical/	15514
16	exp hospitalization/	684893
17	or/5-16	4302608
18	randomized controlled trial/	1106695
19	controlled clinical trial/	460673
20	quasi experimental study/	15509
21	pretest posttest control group design/	798
22	time series analysis/	48284
23	experimental design/	31941
24	multicenter study/	516332
25	exp "systematic review"/ or exp meta analysis/	707848
26	(randomis* or randomiz* or randomly).ti,ab.	2067076
27	groups.ti,ab.	4312939
28	(trial or multicentre or multicenter or multi centre or multi center).ti,ab.	1855646
29	(control group? or (before adj5 after) or (pre adj5 post) or time series or interrupted time series or difference in difference* or DiD).ti,ab.	4918703
30	(systematic review or literature review).ti,ab.	625572
31	or/18-30	10567867

32	4 and 17 and 31	4556
33	(books or chapter or "clinical trial (clinicaltrials.gov)" or clinicaltrials or Clinical Trial or conference abstract or conference paper or "conference review" or data paper or editorial or erratum or letter or note or "preprint (unpublished, non-peer reviewed)" or preprint or short survey).pt.	11218024
34	32 not 33	2615
35	limit 34 to (english language and yr="2008 -Current")	2029

Appendix 2.2 Medline search strategy and results

Search date: 15/10/2025

#	Query	Results
1	(p4q or p4p).ab,ti,kf.	652
2	(nonpayment or non payment).ab,ti,kf.	196
3	((pay* or incentiv* or fee? or remunerat* or compensat* or purchas* or financ* or fund* or monetary or bonus* or penalt*) adj3 (performance? or quality or result? or output? or value or merit? or target*)).ab,ti,kf.	43,202
4	Value-Based Purchasing/	1,012
5	Reimbursement, Incentive/	4,935
6	or/1-5	46,828
7	hospital*.ti,ab,kf.	1,894,729
8	exp Secondary Care/	1,141
9	exp Critical Care/	70,449
10	exp Intensive Care Units/	119,368
11	day surger*.ti,ab,kf.	3,499
12	day care.ti,ab,kf.	8,667
13	exp Emergency Medical Services/	184,674
14	exp Hospitals/	337,199
15	exp Inpatients/	33,049
16	exp Day Care, Medical/	5,329
17	exp Emergency Service, Hospital/	110,313
18	exp hospitalization/	321,984
19	inpatient*.ti,ab,kf.	162,465
20	secondary care.ti,ab,kf.	10,223
21	(intensive care or ICU care).ti,ab,kf.	230,488
22	critical care.ti,ab,kf.	52,694
23	emergency care.ab,ti,kf.	15,349
24	or/7-23	2,440,264
25	Randomized Controlled Trial/ or Controlled Clinical Trial/ or Multicenter Study/ or "Systematic Review"/ or Evaluation Study/ or controlled before-after studies/ or historically controlled study/ or interrupted time series analysis/	1,581,065



26	(randomis* or randomiz* or randomly).ti,ab.	1,313,358
27	groups.ti,ab.	2,957,792
28	(trial or multicentre or multicenter or multi centre or multi center).ti,ab.	1,082,543
29	(control group? or (before adj5 after) or (pre adj5 post) or time series or interrupted time series or difference in difference* or DiD).ti,ab.	3,391,750
30	(systematic review or literature review).ti,ab.	511,732
31	(systematic adj2 review).ti,ab.	383,630
32	(meta analysis or observational study or pragmatic clinical trial or randomized controlled trial or systematic review or multicenter study).pt.	1,473,164
33	or/25-32	7,493,003
34	6 and 24 and 33	2,255
35	(editorial or letter or news or preprint).pt.	2,330,948
36	(protocol or protocols).ti.	118,351
37	34 not (35 or 36)	2,203
38	limit 37 to yr="2008 -Current"	1,790

Appendix 2.3 Econlit search strategy and results

Search date: 13/10/2025

Set#: S1

Searched for: AB, TI, SU(P4P OR P4Q OR nonpayment OR "non payment" OR ((pay* OR incentiv* OR fee OR fees OR remunerat* OR compensat* OR purchas* OR financ* OR fund* OR monetary OR bonus* OR penalt*) N/3 (performance* OR quality OR result* OR output* OR value OR merit* OR target*)))

Results: 44280

Set#: S2

Searched for: AB, TI, SU(hospital* OR inpatient* OR "secondary care" OR "intensive care" OR "ICU care" OR "critical care" OR "day surger*" OR "day care" OR "emergency care")

Results: 10497

Set#: S3

Searched for: ([S1] AND [S2]) AND (la.exact("ENG") AND stype.exact("Scholarly Journals") AND pd(20080101-20251231))

Databases: EconLit

Results: 261

Appendix 2.4 Cochrane search strategy and results

Search date: 14/10/2025

- #1 ((pay* OR incentiv* OR fee OR fees OR remunerat* OR compensat* OR purchas* OR financ* OR fund* OR monetary OR bonus* OR penalt*) NEAR/3 (performance* OR quality OR result* OR output* OR value OR merit* OR target*)):ti,ab,kw (Word variations have been searched)
- #2 MeSH descriptor: [Reimbursement, Incentive] explode all trees
- #3 MeSH descriptor: [Value-Based Purchasing] explode all trees
- #4 #1 or #2 or #3
- #5 (hospital* OR inpatient* OR "secondary care" OR "intensive care" OR ICU OR "critical care" OR day surger* OR "day care" OR "emergency care"):ti,ab,kw
- #6 #4 AND #5
- #7 #6 with Cochrane Library publication date Between Jan 2008 and Oct 2025, in Cochrane Reviews, Clinical Answers, Special Collections

75 results

Appendix 2.5 Scopus search strategy and results

Search date: 16/10/2025

(TITLE-ABS-KEY (p4p OR p4q) OR TITLE-ABS-KEY (nonpayment OR "non payment") OR TITLE-ABS-KEY ((pay* OR incentiv* OR fee OR fees OR remunerat* OR compensat* OR purchas* OR financ* OR fund* OR monetary OR bonus* OR penalt*) W/3 (performance* OR QUALITY OR result* OR output* OR value OR merit* OR target*)))

AND

(TITLE-ABS-KEY (hospital*) OR TITLE-ABS-KEY (inpatient*) OR TITLE-ABS-KEY ("secondary care") OR TITLE-ABS-KEY ("intensive care" OR "icu care") OR TITLE-ABS-KEY ("critical care") OR TITLE-ABS-KEY ("day surger*") OR TITLE-ABS-KEY ("emergency care"))

AND (TITLE-ABS-KEY (randomis* OR randomiz* OR randomly) OR TITLE-ABS-KEY (trial OR multicentre OR multicenter OR "multi centre" OR "multi center") OR TITLE-ABS-KEY ("control group*" OR (before W/5 after) OR (pre W/5 post) OR "time series" OR "interrupted time series" OR "difference in difference*" OR did) OR TITLE-ABS-KEY ("systematic review" OR "literature review"))

AND PUBYEAR > 2007 AND PUBYEAR < 2026 AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "re")) AND (LIMIT-TO (LANGUAGE , "English"))

2,222 results



Appendix 2.6 Bielefeld Academic Search Engine (BASE) search strategy and results

Search date: 31/10/2025

("pay for performance" OR "payment for performance" OR P4P OR "value based purchasing" OR "performance based payment")

AND (hospital* OR inpatient*)

AND (evaluation OR trial OR "quasi experimental")

doctype:(11* 12* 14 19)

year:[2008 TO 2025]

32 results

Appendix 3 Systematic reviews citation searched

Impact of pay-for-performance on management of diabetes: A systematic review

J. Huang, S. Yin, Y. Lin, Q. Jiang, Y. He and L. Du

Journal of Evidence-Based Medicine 2013 Vol. 6 Issue 3 Pages 173EP-184

Impact of reimbursement systems on patient care - a systematic review of systematic reviews

E. Wagenschieber and D. Blunck

Health Economics Review 2024 Vol. 14 Issue 1 Pages 22

Effects of pay for performance in health care: A systematic review of systematic reviews

F. Eijkenaar, M. Emmert, M. Scheppach and O. Schöffski

Health Policy 2013 Vol. 110 Issue 2-3 Pages 115-130

The effects of pay-for-performance programs on health, health care use, and processes of care: A systematic review

A. Mendelson, K. Kondo, C. Damberg, A. Low, M. Motuapuaka, M. Freeman, et al.

Annals of Internal Medicine 2017 Vol. 166 Issue 5 Pages 341EP-353

Payment methods for healthcare providers working in outpatient healthcare settings

L. Jia, Q. Meng, A. Scott, B. Yuan and L. Zhang

The Cochrane database of systematic reviews 2021 Vol. 1 Issue 100909747 Pages CD011865

Alternative Payment Models and Associations with Stroke Outcomes, Spending, and Service Utilization: A Systematic Review

K. Brown, N. El Hussein, R. Grimley, A. Ranta, T. Kass-Hout, S. Kaplan, et al.

Stroke 2022 Vol. 53 Issue 1 Pages 268-278

Quality check: Does it matter for quality how you organize and pay for health care? A review of the international evidence

K. Footman, K. Garthwaite, C. Bamba and M. McKee

International Journal of Health Services 2014 Vol. 44 Issue 3 Pages 479-505

Implementation Processes and Pay for Performance in Healthcare: A Systematic Review

K. K. Kondo, C. L. Damberg, A. Mendelson, M. Motu'apuaka, M. Freeman, M. O'Neil, et al.

Journal of general internal medicine 2016 Vol. 31 Suppl 1 Issue 8605834 Pages 61-9

Pay-for-performance in Taiwan: A systematic review and meta-analysis of the empirical literature

K. T. Kang, R. E. Chang, M. T. Lin and Y. C. Chen



Public Health 2024 Vol. 236 Issue (Kang, Chang) Institute of Health Policy and Management, College of Public Health, National Taiwan University, Taiwan (Republic of China)(Kang) Department of Otolaryngology, Taipei Hospital, Ministry of Health and Welfare, New Taipei City, Taiwan (Republic of China) Pages 328EP-337

Pay-for-performance and patient safety in acute care: A systematic review

L. Slawomirski, M. Hensher, J. Campbell and B. deGraaff

Health Policy 2024 Vol. 143 Issue (Slawomirski, Hensher, Campbell, deGraaff) Menzies Institute for Medical Research, University of Tasmania, 17 Liverpool St., Hobart 7000, Tasmania, Australia Pages 105051

Systematic review: Effects, design choices, and context of pay-for-performance in health care

P. Van Herck, D. De Smedt, L. Annemans, R. Remmen, M. B. Rosenthal and W. Sermeus

BMC health services research 2010 Vol. 10 Issue (Van Herck) Center for Health Services and Nursing Research, Katholieke Universiteit Leuven, Kapucijnenvoer 35, 3000 Leuven, Belgium. Pages 247

Effectiveness of UK provider financial incentives on quality of care: A systematic review

R. Mandavia, N. Mehta, A. Schilder and E. Mossialos

British Journal of General Practice 2017 Vol. 67 Issue 664 Pages e800EP-e815

Evidence on the effectiveness of value-based payment schemes implemented in a hospital setting: A systematic review

S. Mokhtary, A. Janati, M. Yousefi and B. Raei

Journal of education and health promotion 2024 Vol. 13 Issue 101593794 Pages 327

Pay for performance for hospitals

T. Mathes, D. Pieper, J. Morche, S. Polus, T. Jaschinski and M. Eikermann

The Cochrane database of systematic reviews 2019 Vol. 7 Issue 100909747 Pages CD011156

Early Performance of Hospital Value-based Purchasing Program in Medicare: A Systematic Review

Y. R. Hong, O. Nguyen, S. Yadav, E. Etzold, J. Song, R. P. Duncan, et al.

Medical Care 2020 Vol. 58 Issue 8 Pages 734EP-743

Effects of different payment methods on perinatal care outcomes: a systematic review

Z. Ostad-Ahmadi, V. Yazdi-Feyzabad, R. Goudarzi, A. E. Quinn, M. Heidarzadeh and M. Moghadam

BMC Health Services Research 2025 Vol. 25 Issue 1

Appendix 4 Excluded full texts

Reference	Reason for exclusion
(2012). Best practice tariffs and their impact. Audit commission for local authorities and the national health service in England.	Wrong study design
Adler-Milstein, Julia, Furukawa, Michael F, King, Jennifer, & Jha, Ashish K (2013). Early results from the hospital Electronic Health Record Incentive Programs.. The American journal of managed care, 19(7), e273-84.	Wrong outcomes
Al-Amin M., Li K., Hefner J., & Islam M.N. (2023). Were hospitals with sustained high performance more successful at reducing mortality during the pandemic's second wave?. Health care management review, 48(1), 70-79. https://dx.doi.org/10.1097/HMR.0000000000000354	Wrong outcomes
Ali S., Egunsola O., Al-Dossari D.S., & Al-Zaagi I.A. (2018). Adverse drug reaction reporting in a large tertiary hospital in Saudi Arabia: results of an incentive strategy. Therapeutic Advances in Drug Safety, 9(10), 585-590. https://dx.doi.org/10.1177/2042098618790209	Wrong intervention
Allen, Thomas, Fichera, Eleonora, & Sutton, Matt (2016). Can Payers Use Prices to Improve Quality? Evidence from English Hospitals. Health Economics, 25(1), 56-70.	Wrong intervention
An, L. C., Bluhm, J. H., Foldes, S. S., Alesci, N. L., Klatt, C. M., Center, B. A., ..., & Manley, M. W. (2008). A randomized trial of a pay-for-performance program targeting clinician referral to a state tobacco quitline. Arch. Intern. Med., 168(18), 1993-1999. https://dx.doi.org/10.1001/archinte.168.18.1993	Wrong setting
Armour, B. S., Friedman, C., Pitts, M. M., Wike, J., Alley, L., & Etchason, J. (2004). The influence of year-end bonuses on colorectal cancer screening. Am. J. Managed Care, 10(9), 617-624.	Wrong setting
Awad, Nadia, Caputo, Francis J, Carpenter, Jeffrey P, Alexander, James B, Trani, Jose L, & Lombardi, Joseph V (2017). Relative value unit-based compensation incentivization in an academic vascular practice improves productivity with no early adverse impact on quality.. Journal of vascular surgery, 65(2), 579-582. https://dx.doi.org/10.1016/j.jvs.2016.08.104	Wrong intervention
Barnato, A. E., Moore, R., Moore, C. G., Kohatsu, N. D., & Sudore, R. L. (2017). Financial incentives to increase advance care planning among Medicaid beneficiaries: lessons learned from two pragmatic randomized trials. Journal of Pain and Symptom Management, 10, 1-11.	Wrong setting
Bastani, Hamsa, Goh, Joel, & Bayati, Mohsen (2019). Evidence of Upcoding in Pay-for-Performance Programs. Management Science, 65(3), 1042-1060.	Wrong intervention
Bastian, Nathaniel D, Kang, Hyojung, Nembhard, Harriet B, Bloschichak, Andrew, & Griffin, Paul M (2016). The Impact of a Pay-for-Performance Program on Central Line-Associated Blood Stream Infections in Pennsylvania.. Hospital topics, 94(1), 8-14. https://dx.doi.org/10.1080/00185868.2015.1130542	Wrong study design
Basu, Rashmita, & Makam, Anil N (2025). Did Site-Neutral Payment for Long-Term Care Hospitals Reduce Financial Incentives to Time Discharge?.. Journal of the American Medical Directors Association, 26(8), 105689. https://dx.doi.org/10.1016/j.jamda.2025.105689	Wrong setting
Beaulieu, N. D., & Horrigan, D. R. (2005). Putting smart money to work for quality improvement. Health Serv. Res., 40(5), 1318-1334. https://dx.doi.org/10.1111/j.1475-6773.2005.00414.x	Wrong year
Bernacki, Rachelle E, Ko, Danielle N, Higgins, Philip, Whitlock, Sandra N, Cullinan, Amelia, Wilson, Robin, ..., & Billings, J Andrew (2012). Improving access to palliative care through an innovative quality improvement initiative: an opportunity for pay-for-performance.. Journal of palliative medicine, 15(2), 192-9. https://dx.doi.org/10.1089/jpm.2011.0301	Wrong intervention
Berthiaume, J. T., Chung, R. S., Ryskina, K. L., Walsh, J., & Legorreta, A. P. (2006). Aligning financial incentives with quality of care in the hospital setting. J Healthc Qual, 28(2), 36-44,51.	Wrong year



Reference	Reason for exclusion
Blustein, J., Weissman, J. S., Ryan, A. M., Doran, T., & Hasnain-Wynia, R. (2011). Analysis raises questions on whether pay-for-performance in Medicaid can efficiently reduce racial and ethnic disparities. <i>Health Aff.</i> , 30(6), 1165-1175. 10.1377/hlthaff.2010.1022	Wrong study design
Boland G.W.L., Halpern E.F., & Gazelle G.S. (2010). Radiologist report turnaround time: Impact of pay-for-performance measures. <i>American Journal of Roentgenology</i> , 195(3), 707-711. https://dx.doi.org/10.2214/AJR.09.4164	Wrong study design
Breck A., Marr J., Turenne M., & Esposito D. (2022). The Role of Social Risk Factors in Dialysis Quality and Patient Outcomes Under a Medicare Quality Incentive Program. <i>Medical Care</i> , 60(10), 735-742. https://dx.doi.org/10.1097/MLR.0000000000001750	Wrong setting
Brewer A., Hughes M.C., & Patel K.N. (2024). Impact of Repeated Reimbursement Penalties on Hospital Total Quality Scores. <i>Journal of patient safety</i> , 20(3), 198-201. https://dx.doi.org/10.1097/PTS.0000000000001199	Wrong study design
Britteon P., Kristensen S.R., Lau Y.-S., McDonald R., & Sutton M. (2023). Spillover effects of financial incentives for providers onto non-targeted patients: Daycase surgery in English hospitals. <i>Health Economics, Policy and Law</i> , 18(3), 289-304. https://dx.doi.org/10.1017/S1744133123000063	Wrong outcomes
Brouwers, J., Seys, D., Claessens, F., Van Wilder, A., Bruyneel, L., De Ridder, D., ..., & Vanhaecht, K. (2024). Effect on hospital incentive payments and quality performance of a hospital pay for performance (P4P) programme in Belgium. <i>Journal of healthcare quality research</i> , 39(3), 147-154. https://dx.doi.org/10.1016/j.jhqr.2024.02.005	Wrong study design
Brown, K., el-Husseini, N., Grimley, R., Ranta, A., Kass-Hout, T., Kaplan, S., ..., & Kaufman, B. G. (2022). Alternative Payment Models and Associations with Stroke Outcomes, Spending, and Service Utilization: A Systematic Review. <i>Stroke</i> , 53(1), 268-278. https://dx.doi.org/10.1161/STROKEAHA.121.033983	Wrong study design
Cameron, P. A., Kennedy, M. P., & McNeil, J. J. (1999). The effects of bonus payments on emergency service performance in Victoria. <i>Med. J. Aust.</i> , 171(5), 243-246. https://dx.doi.org/10.5694/j.1326-5377.1999.tb123630.x	Wrong year
Cavalieri, Marina, Catalfo, Pierluigi, & Ferrante, Livio (2017). Quality-Enhancing Incentive Initiatives for Hospital Care: Policy Implications and Management Requirements. <i>International Journal of Public Policy</i> , 13(6), 383-404.	Wrong study design
Chang, R. E., Lin, S. P., & Aron, D. C. (2012). A pay-for-performance program in Taiwan improved care for some diabetes patients, but doctors may have excluded sicker ones. <i>Health Aff.</i> , 31(1), 93-102. 10.1377/hlthaff.2010.0402	Wrong study design
Chen C.-C., & Cheng S.-H. (2016). Does pay-for-performance benefit patients with multiple chronic conditions? Evidence from a universal coverage health care system. <i>Health policy and planning</i> , 31(1), 83-90. https://dx.doi.org/10.1093/heapol/czv024	Wrong setting
Chen J.Y., Tian H., Juarez D.T., Yermilov I., Braithwaite R.S., Hodges K.A., ..., & Chung R.S. (2011). Does pay for performance improve cardiovascular care in a "real-world" setting?. <i>American Journal of Medical Quality</i> , 26(5), 340-348. https://dx.doi.org/10.1177/1062860611398303	Wrong setting
Chen T.-T., Hsueh Y.-S.A., Ko C.-H., Shih L.-N., & Yang S.-S. (2017). The effect of a hepatitis pay-for-performance program on outcomes of patients undergoing antiviral therapy. <i>European journal of public health</i> , 27(6), 955-960. https://dx.doi.org/10.1093/eurpub/ckx114	Wrong setting
Chen, H. J., Huang, N., Chen, L. S., Chou, Y. J., Li, C. P., Wu, C. Y., ..., & Chang, Y. C. (2016). Does pay-for-performance program increase providers adherence to guidelines for managing Hepatitis B and Hepatitis C virus infection in Taiwan?. <i>PLoS ONE</i> , 11(8). https://dx.doi.org/10.1371/journal.pone.0161002	Wrong setting
Chen, L. N., Kung, P. T., Chang, H. Y., & Tsai, W. C. (2017). The impact of pay for performance on emergency department visits by and acute readmissions of patients with schizophrenia. <i>Taiwan J. Public Health</i> , 36(2), 148-160. https://dx.doi.org/10.6288/TJPH201736105089	Wrong setting
Chen, T. T., Chung, K. P., Lin, I. C., & Lai, M. S. (2011). The unintended consequence of diabetes mellitus pay-for-performance (P4P) program in Taiwan: Are patients with	Wrong setting

Reference	Reason for exclusion
more comorbidities or more severe conditions likely to be excluded from the P4P program?. Health Serv. Res., 46(1), 47-60. https://dx.doi.org/10.1111/j.1475-6773.2010.01182.x	
Chen, T. T., Oldenburg, B., & Hsueh, Y. S. (2021). Chronic care model in the diabetes pay-for-performance program in Taiwan: benefits, challenges and future directions. World J Diabetes, 12(5), 578-589.	Wrong study design
Chen, Y. C., Lee, C. T. C., Lin, B. J., Chang, Y. Y., & Shi, H. Y. (2016). Impact of pay-for-performance on mortality in diabetes patients in Taiwan. Medicine, 95(27). https://dx.doi.org/10.1097/MD.00000000000004197	Wrong setting
Chen, Y. C., Liao, Y. H., Ku, L. J. E., & Wang, J. D. (2022). Pay-for-performance and continuity of care synergistically reduced amputation of lower extremity in patients with diabetes: a population-based cohort study. BMC Health Serv. Res., 22(1). https://dx.doi.org/10.1186/s12913-022-08075-2	Wrong setting
Cheng K.-C., Lai C.-C., Wang C.-Y., Wang C.-M., Ho C.-H., Sung M.-I., ..., & Ko S.-C. (2022). The Impact of the Pay-for-Performance Program on the Outcome of COPD Patients in Taiwan After One Year. International Journal of COPD, 17, 883-891. https://dx.doi.org/10.2147/COPD.S349468	Wrong study design
Cheng S.-H., Lee T.-T., & Chen C.-C. (2012). A longitudinal examination of a pay-for-performance program for diabetes care: Evidence from a natural experiment. Medical Care, 50(2), 109-116. https://dx.doi.org/10.1097/MLR.0b013e31822d5d36	Wrong setting
Cheng S.-L., Li Y.-R., Huang N., Yu C.-J., Wang H.-C., Lin M.-C., ..., & Lin C.-H. (2021). Effectiveness of nationwide copd pay-for-performance program on copd exacerbations in Taiwan. International Journal of COPD, 16, 2869-2881. https://dx.doi.org/10.2147/COPD.S329454	Wrong setting
Chi, M. J., Chou, K. R., Pei, D., Hwang, J. S., Quinn, L., Chung, M. H., ..., & Liao, Y. M. (2016). Effects and Factors Related to Adherence to A Diabetes Pay-for-Performance Program: Analyses of a National Health Insurance Claims Database. Journal of the American Medical Directors Association, 17(7), 613-619. https://dx.doi.org/10.1016/j.jamda.2016.02.033	Wrong setting
Child S., Sheaff R., Boiko O., Bateman A., & Gericke C.A. (2013). Has incentive payment improved venous thrombo-embolism risk assessment and treatment of hospital in-patients?. F1000Research, 2, 2-41.v1. https://dx.doi.org/10.12688/f1000research.2-41.v1	Wrong study design
Chiou, S. J., Liao, K., Huang, Y. T., Lin, W., & Hsieh, C. J. (2021). Synergy between the pay-for-performance scheme and better physician-patient relationship might reduce the risk of retinopathy in patients with type 2 diabetes. J. Diabetes Invest., 12(5), 819-827. https://dx.doi.org/10.1111/jdi.13422	Wrong setting
Chiu, H. C., Hsieh, H. M., Lin, Y. C., Kuo, S. J., Kao, H. Y., Jennifer Yeh, S. C., ..., & Wang, C. F. (2016). Patient assessment of diabetes care in a pay-for-performance program. Int. J. Qual. Health Care, 28(2), 183-190. https://dx.doi.org/10.1093/intqhc/mzv120	Wrong setting
Chou C.-L., Chung C.-H., Chiu H.-W., Liao C.-T., Wu C.-C., Hsu Y.-H., ..., & Chien W.-C. (2021). Association of pre-ESRD care education with patient outcomes in a 10-year longitudinal study of patients with CKD stages 3-5 in Taiwan. Scientific reports, 11(1), 22602. https://dx.doi.org/10.1038/s41598-021-01860-9	Wrong setting
Chou, C. W., Kung, P. T., Chou, W. Y., & Tsai, W. C. (2019). Pay-for-performance programmes reduce stroke risks in patients with type 2 diabetes: A national cohort study. BMJ Open, 9(10). https://dx.doi.org/10.1136/bmjopen-2018-026626	Wrong study design
Chu Y.-R., Chiang L.-Y., Kung P.-T., & Tsai W.-C. (2025). Impact of early interruption from pay-for-performance program on progression and medical utilization for patients with early chronic kidney disease. International Journal for Quality in Health Care, 37(3), mzaf075. https://dx.doi.org/10.1093/intqhc/mzaf075	Wrong setting
Chung, R. S., Chernicoff, H. O., Nakao, K. A., Nickel, R. C., & Legorreta, A. P. (2003). A quality-driven physician compensation model: four-year follow-up study. J Healthc Qual, 25(6), 31-37. https://dx.doi.org/10.1111/j.1945-1474.2003.tb01099.x	Wrong year



Reference	Reason for exclusion
Colais P., Pinnarelli L., Fusco D., Davoli M., Braga M., & Perucci C.A. (2013). The impact of a pay-for-performance system on timing to hip fracture surgery: experience from the Lazio Region (Italy). <i>BMC health services research</i> , 13, 393.	Wrong study design
Colla, C.H., Wennberg, D.E., Meara, E., Skinner, J.S., Gottlieb, D., Lewis, V.A., ..., & Fisher, E.S. (2012). Spending differences associated with the Medicare Physician Group Practice Demonstration. <i>JAMA</i> , 308(10), 1015-1023. https://dx.doi.org/10.1001/2012.jama.10812	Wrong setting
Damberg, C. L., Elliott, M. N., & Ewing, B. A. (2015). Pay-for-performance schemes that use patient and provider categories would reduce payment disparities. <i>Health Aff.</i> , 34(1), 134-142. https://dx.doi.org/10.1377/hlthaff.2014.0386	Wrong intervention
Darden, Michael, McCarthy, Ian, & Barrette, Eric (2023). Who Pays in Pay-for-Performance: Evidence from Hospital Prices and Financial Penalties. <i>American Journal of Health Economics</i> , 9(3), 435-460.	Wrong outcomes
Decker K.L., Schwab S.D., Bazzoli G.J., Chukmaitov A.S., & Wernz C. (2023). Impact of performance-based budgeting on quality outcomes in U.S. military health care facilities. <i>Health care management review</i> , 48(3), 249-259. https://dx.doi.org/10.1097/HMR.0000000000000372	Wrong setting
Eijkenaar, F., Emmert, M., Scheppach, M., & Schöffski, O. (2013). Effects of pay for performance in health care: A systematic review of systematic reviews. <i>Health Policy</i> , 110(2-3), 115-130. 10.1016/j.healthpol.2013.01.008	Wrong study design
Enamandram S.S., Burk K.S., Dang P.A., Mar W.W., Centerbar C., Boland G.W., ..., & Khorasani R. (2021). Radiology Patient Outcome Measures: Impact of a Departmental Pay-for-Performance Initiative on Key Quality and Safety Measures. <i>Journal of the American College of Radiology</i> , 18(7), 969-981. https://dx.doi.org/10.1016/j.jacr.2020.12.032	Wrong study design
Eriksson T., Tropp H., Wirehn A.-B., & Levin L. (2020). A pain relieving reimbursement program? Effects of a value-based reimbursement program on patient reported outcome measures. <i>BMC health services research</i> , 20(1), 805. https://dx.doi.org/10.1186/s12913-020-05578-8	Wrong study design
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Friedson, Andrew I, Horrace, William C, & Marier, Allison F (2019). So Many Hospitals, So Little Information: How Hospital Value-Based Purchasing Is a Game of Chance. <i>Southern Economic Journal</i> , 86(2), 773-799.	Wrong outcomes
Fu P.-K., & Yu T.-H. (2025). Does asthma pay-for-performance program really improve the quality of asthma care: a nationwide retrospective cohort analysis in Taiwan. <i>BMC Pulmonary Medicine</i> , 25(1), 199. https://dx.doi.org/10.1186/s12890-025-03673-2	Wrong setting
Gallani, Susanna (2023). Conduit Incentives: Eliciting Cooperation from Workers Outside of Managers' Control. <i>Accounting Review</i> , 98(3), 175-202.	Wrong intervention
Gaughan J., Gutacker N., Grasic K., Kreif N., Siciliani L., & Street A. (2019). Paying for efficiency: Incentivising same-day discharges in the English NHS. <i>Journal of Health Economics</i> , 68, 102226. https://dx.doi.org/10.1016/j.jhealeco.2019.102226	Wrong intervention
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Griffin, Xavier L, Achten, Juul, Parsons, Nick, & Costa, Matt L (2021). Does performance-based remuneration improve outcomes in the treatment of hip fracture?.. The bone & joint journal, 103-B(5), 881-887. https://dx.doi.org/10.1302/0301-620X.103B5.BJJ-2020-1839.R1	Wrong study design

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Gu, Q., Koenig, L., Faerber, J., Steinberg, C. R., Vaz, C., & Wheatley, M. P. (2014). The medicare hospital readmissions reduction program: Potential unintended consequences for hospitals serving vulnerable populations. <i>Health Services Research</i> , 49(3), 818-837. https://dx.doi.org/10.1111/1475-6773.12150	Wrong study design
Guccio, Calogero, Lisi, Domenico, & Pignataro, Giacomo (2016). Readmission and Hospital Quality under Different Payment Regimes. <i>FinanzArchiv</i> , 72(4), 453-474.	Wrong study design
Hoffman G.J., & Yakusheva O. (2020). Association between Financial Incentives in Medicare's Hospital Readmissions Reduction Program and Hospital Readmission Performance. <i>JAMA Network Open</i> . https://dx.doi.org/10.1001/jamanetworkopen.2020.2044	Wrong study design
Hong Y.-R., Nguyen O., Yadav S., Etzold E., Song J., Duncan R.P., ..., & Turner K. (2020). Early Performance of Hospital Value-based Purchasing Program in Medicare: A Systematic Review. <i>Medical Care</i> , 58(8), 734-743. https://dx.doi.org/10.1097/MLR.0000000000001354	Wrong study design
Hsieh H.-M., Shin S.-J., Tsai S.-L., & Chiu H.-C. (2016). Effectiveness of pay-for-performance incentive designs on diabetes care. <i>Medical Care</i> , 54(12), 1063-1069. https://dx.doi.org/10.1097/MLR.0000000000000609	Wrong setting
Hsieh, H. M., Chiu, H. C., Lin, Y. T., & Shin, S. J. (2017). A diabetes pay-for-performance program and the competing causes of death among cancer survivors with type 2 diabetes in Taiwan. <i>Int. J. Qual. Health Care</i> , 29(4), 512-520. https://dx.doi.org/10.1093/intqhc/mzx057	Wrong setting
Hsieh, H. M., Gu, S. M., Shin, S. J., Kao, H. Y., Lin, Y. C., & Chiu, H. C. (2015). Cost-effectiveness of a diabetes pay-for-performance program in diabetes patients with multiple chronic conditions. <i>PLoS ONE</i> , 10(7). https://dx.doi.org/10.1371/journal.pone.0133163	Wrong setting
Hsieh, H. M., He, J. S., Shin, S. J., Chiu, H. C., & Lee, C. T. C. (2017). A diabetes pay-for-performance program and risks of cancer incidence and death in patients with type 2 diabetes in Taiwan. <i>Prev. Chronic Dis.</i> , 14(10). https://dx.doi.org/10.5888/pcd14.170012	Wrong setting
Hsieh, H. M., Lin, M. Y., Chiu, Y. W., Wu, P. H., Cheng, L. J., Jian, F. S., ..., & Hwang, S. J. (2017). Economic evaluation of a pre-ESRD pay-for-performance programme in advanced chronic kidney disease patients. <i>Nephrol. Dial. Transplant.</i> , 32(7), 1184-1194. https://dx.doi.org/10.1093/ndt/gfw372	Wrong setting
Hsieh, H. M., Lin, T. H., Lee, I. C., Huang, C. J., Shin, S. J., & Chiu, H. C. (2016). The association between participation in a pay-for-performance program and macrovascular complications in patients with type 2 diabetes in Taiwan: A nationwide population-based cohort study. <i>Prev. Med.</i> , 85, 53-59. https://dx.doi.org/10.1016/j.ypmed.2015.12.013	Wrong study design
Hsieh, H. M., Tsai, S. L., Mau, L. W., & Chiu, H. C. (2016). Effects of Changes in Diabetes Pay-for-Performance Incentive Designs on Patient Risk Selection. <i>Health Serv. Res.</i> , 51(2), 667-686. 1 https://dx.doi.org/10.1111/1475-6773.12338	Wrong intervention
Hsieh, H. M., Tsai, S. L., Shin, S. J., Mau, L. W., & Chiu, H. C. (2015). Cost-effectiveness of diabetes pay-for-performance incentive designs. <i>Med. Care</i> , 53(2), 106-115. https://dx.doi.org/10.1097/MLR.0000000000000264	Wrong setting
Hsu, C. C., & Tai, T. Y. (2014). Long-term glycemic control by a diabetes case-management program and the challenges of diabetes care in Taiwan. <i>Diabetes Res. Clin. Pract.</i> , 106, S328-S332. https://dx.doi.org/10.1016/S0168-8227(14)70738-7	Wrong intervention
Hsu, H. E., Wang, R., Jentzsch, M. S., Jin, R., Goldmann, D., Rhee, C., ..., & Lee, G. M. (2019). Association between value-based incentive programs and catheter-associated urinary tract infection rates in the critical care setting. <i>JAMA</i> , 321(5), 509-511. https://dx.doi.org/10.1001/jama.2018.18997	Wrong study design
Hsu, Heather E, Wang, Rui, Jentzsch, Maximilian S, Horan, Kelly, Jin, Robert, Goldmann, Donald, ..., & Lee, Grace M (2019). The impact of measurement changes on evaluating hospital performance: The case of catheter-associated urinary tract infections.. <i>Infection</i>	Wrong intervention



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Huang J., Yin S., Lin Y., Jiang Q., He Y., & Du L. (2013). Impact of pay-for-performance on management of diabetes: A systematic review. <i>Journal of Evidence-Based Medicine</i> , 6(3), 173-184. https://dx.doi.org/10.1111/jebm.12052	Wrong study design
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Huang, H. L., Kung, C. Y., Wang, S. M., Kung, P. T., Lin, Y. H., Chiu, L. T., ..., & Tsai, W. C. (2021). Effects of body mass index and pay-for-performance program on risk of death in patients with type 2 diabetes: A nationwide cohort study. <i>Int. J. Environ. Res. Public Health</i> , 18(9). https://dx.doi.org/10.3390/ijerph18094648	Wrong setting
Hysong, S.J., Simpson, K., Pietz, K., SoRelle, R., Smitham, K.B., & Petersen, L.A. (2012). Financial incentives and physician commitment to guideline-recommended hypertension management. <i>American Journal of Managed Care</i> , 18(10), e378-e391.	Wrong study design
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Jia, Liying, Meng, Qingyue, Scott, Anthony, Yuan, Beibei, & Zhang, Lu (2021). Payment methods for healthcare providers working in outpatient healthcare settings.. <i>The Cochrane database of systematic reviews</i> , 1(100909747), CD011865. https://dx.doi.org/10.1002/14651858.CD011865.pub2	Wrong study design
Jones R.S., Ramirez A.G., Stukenborg G.J., Tracci M.C., & Turrentine F.E. (2019). Observations on the Medicare Value-Based Ranking of Hospitals During Fiscal Years 2015 and 2016. <i>American journal of medical quality : the official journal of the American College of Medical Quality</i> , 34(2), 136-143. https://dx.doi.org/10.1177/1062860618791045	Wrong study design
Kang K.-T., Chang R.-E., Lin M.-T., & Chen Y.-C. (2024). Pay-for-performance in Taiwan: A systematic review and meta-analysis of the empirical literature. <i>Public Health</i> , 236, 328-337. https://dx.doi.org/10.1016/j.puhe.2024.09.005	Wrong study design
Kawai, Alison Tse, Calderwood, Michael S, Jin, Robert, Soumerai, Stephen B, Vaz, Louise E, Goldmann, Donald, ..., & Lee, Grace M (2015). Impact of the Centers for Medicare and Medicaid Services Hospital-Acquired Conditions Policy on Billing Rates for 2 Targeted Healthcare-Associated Infections.. <i>Infection control and hospital epidemiology</i> , 36(8), 871-7. https://dx.doi.org/10.1017/ice.2015.86	Wrong outcomes
Keating, Nancy L, Jhatakia, Shalini, Brooks, Gabriel A, Tripp, Amanda S, Cintina, Inna, Landrum, Mary Beth, ..., & Hassol, Andrea (2021). Association of Participation in the Oncology Care Model With Medicare Payments, Utilization, Care Delivery, and Quality Outcomes.. <i>JAMA</i> , 326(18), 1829-1839. https://dx.doi.org/10.1001/jama.2021.17642	Wrong setting
Keller M.S., Chen X., Godwin J., Needleman J., & Pourat N. (2021). Evaluating inpatient adverse outcomes under California's Delivery System Reform Incentive Payment Program. <i>Health Services Research</i> , 56(1), 36-48. https://dx.doi.org/10.1111/1475-6773.13550	Wrong intervention
Kim, K. M., Max, W., White, J. S., Chapman, S. A., & Muench, U. (2020). Do penalty-based pay-for-performance programs improve surgical care more effectively than other payment strategies? A systematic review. <i>Ann. Med. Surg.</i> , 60, 623-630. https://dx.doi.org/10.1016/j.amsu.2020.11.060	Wrong study design
Kondo, Karli K, Damberg, Cheryl L, Mendelson, Aaron, Motu'apuaka, Makalapua, Freeman, Michele, O'Neil, Maya, ..., & Kansagara, Devan (2016). Implementation Processes and Pay for Performance in Healthcare: A Systematic Review.. <i>Journal of</i>	Wrong study design

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Kruse, Gregory B, Polsky, Daniel, Stuart, Elizabeth A, & Werner, Rachel M (2012). The impact of hospital pay-for-performance on hospital and Medicare costs.. <i>Health services research</i> , 47(6), 2118-36. https://dx.doi.org/10.1111/1475-6773.12003	Wrong outcomes
Kung, F. P., Tsai, C. F., Lu, C. L., Huang, L. C., & Lu, C. H. (2020). Diabetes pay-for-performance program can reduce all-cause mortality in patients with newly diagnosed type 2 diabetes mellitus. <i>Medicine</i> , 99(7). https://dx.doi.org/10.1097/MD.00000000000019139	Wrong setting
Lee C.-Y., Chi M.-J., Yang S.-L., Lo H.-Y., & Cheng S.-H. (2015). Using financial incentives to improve the care of tuberculosis patients. <i>The American journal of managed care</i> , 21(1), e35EP - e42.	Wrong setting
Lee T.-T., Cheng S.-H., Chen C.-C., & Lai M.-S. (2010). A pay-for-performance program for diabetes care in Taiwan: A preliminary assessment. <i>American Journal of Managed Care</i> , 16(1), 65-69.	Wrong study design
Lee, I. T., Hsu, C. C., Sheu, W. H. H., Su, S. L., Wu, Y. L., & Lin, S. Y. (2019). Pay-for-performance for shared care of diabetes in Taiwan. <i>J. Formos. Med. Assoc.</i> , 118, S122-S129. https://dx.doi.org/10.1016/j.jfma.2019.08.011	Wrong study design
Lee, M. C., Lee, C. H., Chang, L. Y., Chang, C. H., Zhang, J. F., Lee, M. R., ..., & Chen, S. M. (2019). Association of Metformin Use With End-Stage Renal Disease in Patients With Type 2 Diabetes Mellitus: A Nationwide Cohort Study Under the Pay-for-Performance Program. <i>J. Clin. Pharmacol.</i> , 59(11), 1443-1452. https://dx.doi.org/10.1002/jcph.1452	Wrong setting
Lee, S. J., Venkataraman, S., Heim, G. R., Roth, A. V., & Chilingerian, J. (2020). Impact of the value-based purchasing program on hospital operations outcomes: An econometric analysis. <i>J Oper Manage</i> , 66(1-2), 151-175. https://dx.doi.org/10.1002/joom.1057	Wrong study design
Lee, Y. H., Kung, P. T., Kuo, W. Y., Kao, S. L., & Tsai, W. C. (2020). The effect of pay for performance on risk incidence of hip fracture in type 2 diabetic patients: A nationwide population-based cohort study. <i>Medicine</i> , 99(12). https://dx.doi.org/10.1097/MD.00000000000019592	Wrong setting
Leuchter R.K., Sarkisian C.A., Trotsky-Sirr R., Wei E.K., Carrillo C.A., Vangala S., ..., & Mafi J.N. (2023). Choosing Wisely Interventions to Reduce Antibiotic Overuse in the Safety Net. <i>American Journal of Managed Care</i> , 29(10), 488-496. https://dx.doi.org/10.37765/AJMC.2023.89367	Wrong intervention
Lewis A., Howland R.E., Horwitz L.I., & Desai S.M. (2023). Medicaid Value-Based Payments and Health Care Use for Patients With Mental Illness. <i>JAMA health forum</i> , 4(9), e233197. https://dx.doi.org/10.1001/jamahealthforum.2023.3197	Wrong setting
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Li, H., An, L., & Yin, X. (2013). Exploration of payment based on performance management in clinical practice in nursing unit. <i>Life Science Journal</i> , 10(3), 54-57.	Wrong outcomes
Li, Y. H., Tsai, W. C., Khan, M., Yang, W. T., Lee, T. F., Wu, Y. C., ..., & Kung, P. T. (2010). The effects of pay-for-performance on tuberculosis treatment in Taiwan. <i>Health policy and planning</i> , 25(4), 334-341. https://dx.doi.org/10.1093/heapol/czq006	Wrong setting
Lian, W. C., Livneh, H., Huang, H. J., Lu, M. C., Guo, H. R., & Tsai, T. Y. (2021). Adding Pay-for-Performance Program to Routine Care Was Related to a Lower Risk of Depression Among Type 2 Diabetes Patients in Taiwan. <i>Front. Public Health</i> , 9. https://dx.doi.org/10.3389/fpubh.2021.650452	Wrong setting



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Lin, M. T., Hsu, C. N., Lee, C. T., & Cheng, S. H. (2022). Effect of a Pay-for-Performance Program on Renal Outcomes Among Patients With Early-Stage Chronic Kidney Disease in Taiwan. <i>Int J Health Policy Manag</i> , 11(8), 1307-1315. https://dx.doi.org/10.34172/ijhpm.2021.27	Wrong setting
Lin, M. Y., Chang, M. Y., Wu, P. Y., Wu, P. H., Lin, M. H., Hsu, C. C., ..., & Chiu, Y. W. (2022). Multidisciplinary care program in pre-end-stage kidney disease from 2010 to 2018 in Taiwan. <i>J. Formos. Med. Assoc.</i> , 121, S64-S72. https://dx.doi.org/10.1016/j.jfma.2021.12.008	Wrong setting
Lin, M. Y., Cheng, L. J., Chiu, Y. W., Hsieh, H. M., Wu, P. H., Lin, Y. T., ..., & Hwang, S. J. (2018). Effect of national pre-ESRD care program on expenditures and mortality in incident dialysis patients: A population-based study. <i>PLoS ONE</i> , 13(6). https://dx.doi.org/10.1371/journal.pone.0198387	Wrong setting
Lin, M. Y., Chiu, Y. W., Hsu, Y. H., Wu, M. S., Chang, J. M., Hsu, C. C., ..., & Hwang, S. J. (2022). CKD Care Programs and Incident Kidney Failure: A Study of a National Disease Management Program in Taiwan. <i>Kidney Med.</i> , 4(7). https://dx.doi.org/10.1016/j.xkme.2022.100485	Wrong setting
Lin, T. Y., Chen, C. Y., Huang, Y. T., Ting, M. K., Huang, J. C., & Hsu, K. H. (2016). The effectiveness of a pay for performance program on diabetes care in Taiwan: A nationwide population-based longitudinal study. <i>Health Policy</i> , 120(11), 1313-1321. https://dx.doi.org/10.1016/j.healthpol.2016.09.014	Wrong setting
Lo, H. Y., Yang, S. L., Lin, H. H., Bai, K. J., Lee, J. J., Lee, T. I., ..., & Chiang, C. Y. (2016). Does enhanced diabetes management reduce the risk and improve the outcome of tuberculosis?. <i>Int. J. Tuberc. Lung Dis.</i> , 20(3), 376-382. https://dx.doi.org/10.5588/ijtld.15.0654	Wrong setting
Lu C.-W., Wu Y.-F., Chen T.-H., Chung C.-M., Lin C.-L., Lin Y.-S., ..., & Lin M.-S. (2021). A nationwide cohort investigation on pay-for-performance and major adverse limb events in patients with diabetes. <i>Preventive Medicine</i> , 153, 106787. https://dx.doi.org/10.1016/j.ypmed.2021.106787	Wrong setting
Lu J.-F.R., Chen Y.I., Eggleston K., Chen C.-H., & Chen B. (2023). Assessing Taiwan's pay-for-performance program for diabetes care: a cost-benefit net value approach. <i>European Journal of Health Economics</i> , 24(5), 717-733. https://dx.doi.org/10.1007/s10198-022-01504-3	Wrong setting
Mandavia R., Mehta N., Schilder A., & Mossialos E. (2017). Effectiveness of UK provider financial incentives on quality of care: A systematic review. <i>British Journal of General Practice</i> , 67(664), e800EP - e815. https://dx.doi.org/10.3399/bjgp17X693149	Wrong study design
Markovitz A.A., & Ryan A.M. (2017). Pay-for-Performance: Disappointing Results or Masked Heterogeneity?. <i>Medical Care Research and Review</i> , 74(1), 3-78. https://dx.doi.org/10.1177/1077558715619282	Wrong study design
Mathes, T., Pieper, D., Morche, J., Polus, S., Jaschinski, T., & Eikermann, M. (2019). Pay for performance for hospitals. <i>Cochrane Database of Systematic Reviews</i> , 2019(7), CD011156. https://dx.doi.org/10.1002/14651858.CD011156.pub2	Wrong study design
McNair, Peter D., & Luft, Harold S. (2012). Enhancing Medicare's hospital-acquired conditions policy to encompass readmissions. <i>Medicare & medicaid research review</i> , 2(2). https://dx.doi.org/10.5600/mmrr.002.02.a03	Wrong intervention
Meddings, J. A., Reichert, H., Rogers, M. A. M., Saint, S., Stephansky, J., & McMahon Jr, L. F. (2012). Effect of nonpayment for hospital-acquired, catheter-associated urinary tract infection: A statewide analysis. <i>Annals of Internal Medicine</i> , 157(5), 305-312. https://dx.doi.org/10.7326/0003-4819-157-5-201209040-00003	Wrong study design
Mehrotra A., Damberg C.L., Sorbero M.E.S., & Teleki S.S. (2009). Pay for performance in the hospital setting: What is the state of the evidence?. <i>American Journal of Medical Quality</i> , 24(1), 19-28. https://dx.doi.org/10.1177/1062860608326634	Wrong study design

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Mokhtary, Shahriyar, Janati, Ali, Yousefi, Mahmood, & Raei, Behzad (2024). Evidence on the effectiveness of value-based payment schemes implemented in a hospital setting: A systematic review. <i>Journal of education and health promotion</i> , 13(101593794), 327. https://dx.doi.org/10.4103/jehp.jehp_873_23	Wrong study design
Mubark, I., Abouelela, A., Genena, A., Al Ghunimat, A., Sarhan, I., & Ashwood, N. (2020). Mortality following distal femur fractures versus proximal femur fractures in elderly population: the impact of best practice tariff. <i>Cureus</i> , 12(9).	Wrong study design
Murphy D.J., Lyu P.F., Gregg S.R., Martin G.S., Hockenberry J.M., Coopersmith C.M., ..., & Sevransky J. (2016). Using incentives to improve resource utilization: A quasi-experimental evaluation of an ICU quality improvement program. <i>Critical Care Medicine</i> , 44(1), 162-170. https://dx.doi.org/10.1097/CCM.0000000000001395	Wrong intervention
Norton, Edward C., Li, Jun, Das, Anup, & Chen, Lena M. (2018). Moneyball in Medicare. <i>Journal of Health Economics</i> , 61, 259-273. https://doi.org/10.1016/j.jhealeco.2017.07.006	Wrong study design
Ostad-Ahmadi, Z., Yazdi-Feyzabad, V., Goudarzi, R., Quinn, A.E., Heidarzadeh, M., & Moghadam, M. (2025). Effects of different payment methods on perinatal care outcomes: a systematic review. <i>BMC Health Services Research</i> , 25(1). https://dx.doi.org/10.1186/s12913-025-13160-3	Wrong study design
Padula, W. V., Black, J. M., Davidson, P. M., Kang, S. Y., & Pronovost, P. J. (2020). Adverse Effects of the Medicare PSI-90 Hospital Penalty System on Revenue-Neutral Hospital-Acquired Conditions. <i>J. Patient Saf.</i> , 16(2), E97-E102. https://dx.doi.org/10.1097/PTS.0000000000000517	Wrong study design
Padula, W. V., Makic, M. B. F., Wald, H. L., Campbell, J. D., Nair, K. V., Mishra, M. K., ..., & Valuck, R. J. (2015). Hospital-acquired pressure ulcers at academic medical centers in the United States, 2008-2012: Tracking changes since the CMS nonpayment policy. <i>Jt. Comm. J. Qual. Patient Saf.</i> , 41(6), 257-263. https://dx.doi.org/10.1016/S1553-7250(15)41035-9	Wrong study design
Papanicolas I., Orav E.J., & Jha A.K. (2020). Is mortality readmissions bias a concern for readmission rates under the Hospital Readmissions Reduction Program?. <i>Health Services Research</i> , 55(2), 249-258. https://dx.doi.org/10.1111/1475-6773.13268	Wrong study design
Patel K.V., Keshvani N., Pandey A., Vaduganathan M., Holmes D.N., Matsouaka R.A., ..., & Fonarow G.C. (2022). Association of readmission penalty amount with subsequent 30-day risk standardized readmission and mortality rates among patients hospitalized with heart failure: An analysis of get with the guidelines - heart failure participating centers. <i>American Heart Journal</i> , 246, 1-11. https://dx.doi.org/10.1016/j.ahj.2021.12.014	Wrong study design
Prang, Khic-Houy, Canaway, Rachel, Bismark, Marie, Dunt, David, & Kelaher, Margaret (2018). The impact of Australian healthcare reforms on emergency department time-based process outcomes: An interrupted time series study. <i>PloS one</i> , 13(12), e0209043. https://dx.doi.org/10.1371/journal.pone.0209043	Wrong intervention
Roberts E.T., Zaslavsky A.M., Barnett M.L., Landon B.E., Ding L., & McWilliams J.M. (2018). Assessment of the Effect of Adjustment for Patient Characteristics on Hospital Readmission Rates: Implications for Pay for Performance. <i>JAMA Internal Medicine</i> , 178(11), 1498-1507. https://dx.doi.org/10.1001/jamainternmed.2018.4481	Wrong study design
Roland, M., & Dudley, R. A. (2015). How Financial and Reputational Incentives Can Be Used to Improve Medical Care. <i>Health Serv. Res.</i> , 50, 2090-2115. https://dx.doi.org/10.1111/1475-6773.12419	Wrong study design
Rosenthal M.B., Landrum M.B., Robbins J.A., & Schneider E.C. (2016). Pay for Performance in Medicaid: Evidence from Three Natural Experiments. <i>Health Services Research</i> , 51(4), 1444-1466. https://dx.doi.org/10.1111/1475-6773.12426	Wrong setting
Ryan, A., Sutton, M., & Doran, T. (2014). Does winning a pay-for-performance bonus improve subsequent quality performance? Evidence from the hospital quality incentive	Wrong intervention



Reference	Reason for exclusion
demonstration. Health Serv. Res., 49(2), 568-587. https://dx.doi.org/10.1111/1475-6773.12097	
Saitone, T.L., Sexton, R.J., & Sexton Ward, A. (2018). The Hospital-Acquired Conditions (HAC) reduction program: using cranberry treatment to reduce catheter-associated urinary tract infections and avoid Medicare payment reduction penalties. Journal of Medical Economics, 21(1), 97-106. https://dx.doi.org/10.1080/13696998.2017.1396993	Wrong intervention
Schatz, M. (2008). Does pay-for-performance influence the quality of care?. Curr. Opin. Allergy Clin. Immunol., 8(3), 213-221. 10.1097/ACI.0b013e3282fe9d1a	Wrong study design
Sheen Y.-J., Kung P.-T., Kuo W.-Y., Chiu L.-T., & Tsai W.-C. (2018). Impact of the pay-for-performance program on lower extremity amputations in patients with diabetes in Taiwan. Medicine (United States), 97(41), e12759. https://dx.doi.org/10.1097/MD.00000000000012759	Wrong study design
Sheen, Y. J., Hsu, C. C., Kung, P. T., Chiu, L. T., & Tsai, W. C. (2022). Impact of chronic hepatitis on cardiovascular events among type 2 diabetes patients in Taiwan pay-for-performance program. Sci. Rep., 12(1). https://dx.doi.org/10.1038/s41598-022-15827-x	Wrong outcomes
Sheetz K.H., Gerhardinger L., Ryan A.M., & Waits S.A. (2021). Changes in dialysis center quality associated with the end-stage renal disease quality incentive program an observational study with a regression discontinuity design. Annals of Internal Medicine, 174(8), 1058-1064. https://dx.doi.org/10.7326/M20-6662	Wrong setting
Sheu, S. J., Lin, W. L., Kao Yang, Y. H., Hwu, C. M., & Cheng, C. L. (2018). Pay for performance program reduces treatment needed diabetic retinopathy - A nationwide matched cohort study in Taiwan. BMC Health Serv. Res., 18(1). https://dx.doi.org/10.1186/s12913-018-3454-6	Wrong setting
Shittu A., Hannon E., Kyriacou J., Arnold D., Kitz M., Zhang Z., ..., & Kohli-Seth R. (2021). Improving Care for Critical Care Patients by Strategic Alignment of Quality Goals With a Physician Financial Incentive Model. Quality management in health care, 30(1), 21-26. https://dx.doi.org/10.1097/QMH.0000000000000281	Wrong study design
Slawomirski L., Hensher M., Campbell J., & deGraaff B. (2024). Pay-for-performance and patient safety in acute care: A systematic review. Health Policy, 143, 105051. https://dx.doi.org/10.1016/j.healthpol.2024.105051	Wrong study design
Stewart, M.T., Horgan, C.M., Garnick, D.W., Ritter, G., & McLellan, A.T. (2013). Performance contracting and quality improvement in outpatient treatment: Effects on waiting time and length of stay. Journal of Substance Abuse Treatment, 44(1), 27-33. https://dx.doi.org/10.1016/j.jsat.2012.02.001	Wrong setting
Stewart, Maureen T, Reif, Sharon, Dana, Beth, Nguyen, AnMarie, Torres, Maria, Davis, Margot T, ..., & Horgan, Constance M (2018). Incentives in a public addiction treatment system: Effects on waiting time and selection.. Journal of substance abuse treatment, 95, 1-8. https://dx.doi.org/10.1016/j.jsat.2018.09.002	Wrong setting
Stone, P. W., Adamson, A., Hurst, J. R., Michael Roberts, C., & Quint, J. K. (2022). Does pay-for-performance improve patient outcomes in acute exacerbation of COPD admissions?. Thorax, 77(3), 239-246. https://dx.doi.org/10.1136/thoraxjnl-2021-216880	Wrong intervention
Su W.-C., Chen T.-T., Yang S.-S., Shih L.-N., Liu C.-K., Wang C.-C., ..., & Wu C.-H. (2022). The effect of a pay-for-performance program on health-related quality of life for patients with hepatitis in Taiwan. Health and Quality of Life Outcomes, 20(1), 130. https://dx.doi.org/10.1186/s12955-022-02038-1	Wrong setting
Talbot T.R., Johnson J.G., Fergus C., Domenico J.H., Schaffner W., Daniels T.L., ..., & Hickson G.B. (2013). Sustained improvement in hand hygiene adherence: Utilizing shared accountability and financial incentives. Infection Control and Hospital Epidemiology, 34(11), 1129-1136. https://dx.doi.org/10.1086/673445	Wrong intervention
Tan, E. C. H., Pwu, R. F., Chen, D. R., & Yang, M. C. (2014). Is a diabetes pay-for-performance program cost-effective under the National Health Insurance in Taiwan?. Qual. Life Res., 23(2), 689-698. https://dx.doi.org/10.1007/s11136-013-0502-x	Wrong setting
Thompson M.P., Cain-Nielsen A.H., Yost Karlslake M.L., Pizzo C.A., Yaser J.M., Syrjamaki J.D., ..., & Regenbogen S.E. (2023). Hospital Performance in a Statewide	Wrong outcomes

Reference	Reason for exclusion
Commercial Insurer Episode-Based Incentive Program. American Journal of Managed Care, 29(8), E250EP - E256. https://dx.doi.org/10.37765/ajmc.2023.89412	
Tsai W.-C., Kung P.-T., Khan M., Campbell C., Yang W.-T., Lee T.-F., ..., & Li Y.-H. (2010). Effects of pay-for-performance system on tuberculosis default cases control and treatment in Taiwan. Journal of Infection, 61(3), 235-243. https://dx.doi.org/10.1016/j.jinf.2010.06.016	Wrong setting
Tsai, W. C., Huang, K. H., Chen, P. C., Chang, Y. C., Chen, M. S., & Lee, C. B. (2023). Effects of individual and neighborhood social risks on diabetes pay-for-performance program under a single-payer health system. Soc. Sci. Med., 326. https://dx.doi.org/10.1016/j.socscimed.2023.115930	Wrong outcomes
Tsai, Y. S., Kung, P. T., Ku, M. C., Wang, Y. H., & Tsai, W. C. (2018). Effects of pay for performance on risk incidence of infection and of revision after total knee arthroplasty in type 2 diabetic patients: A nationwide matched cohort study. PLoS ONE, 13(11). https://dx.doi.org/10.1371/journal.pone.0206797	Wrong setting
Uri O., Folman Y., Laufer G., & Behrbalk E. (2020). A Reimbursement System Based on a 48-Hour Target Time for Surgery Shortens the Waiting Time for Hip Fracture Fixation in Elderly Patients. Journal of Orthopaedic Trauma, 34(5), 248-251. https://dx.doi.org/10.1097/BOT.0000000000001681	Wrong study design
Van Herck P., De Smedt D., Annemans L., Remmen R., Rosenthal M.B., & Sermeus W. (2010). Systematic review: Effects, design choices, and context of pay-for-performance in health care: a systematic review. BMC health services research, 10, 247. https://dx.doi.org/10.1186/1472-6963-10-247	Wrong study design
Vlaanderen, F. P., Tanke, M. A., Bloem, B. R., Faber, M. J., Eijkenaar, F., Schut, F. T., ..., & Jeurissen, P. P. T. (2019). Design and effects of outcome-based payment models in healthcare: a systematic review. Eur. J. Health Econ., 20(2), 217-232. https://dx.doi.org/10.1007/s10198-018-0989-8	Wrong study design
Vlassov V.V., Bates K., & McKee M. (2020). Quality improvement in hospitals in the Russian Federation, 2000-2016: A systematic review. Health Economics, Policy and Law, 15(3), 403-413. https://dx.doi.org/10.1017/S1744133119000252	Wrong study design
Wagenschieber E., & Blunck D. (2024). Impact of reimbursement systems on patient care - a systematic review of systematic reviews. Health Economics Review, 14(1), 22. https://dx.doi.org/10.1186/s13561-024-00487-6	Wrong study design
Wang Y., Ding Y., Park E., & Hunte G. (2019). Do Financial Incentives Change Length-of-stay Performance in Emergency Departments? A Retrospective Study of the Pay-for-performance Program in Metro Vancouver. Academic Emergency Medicine, 26(8), 856-866. https://dx.doi.org/10.1111/acem.13635	Wrong study design
Wasfy J.H., Hidrue M.K., Ngo J., Tanguturi V.K., Cafiero-Fonseca E.T., Thompson R.W., ..., & Ferris T.G. (2020). Association of an Acute Myocardial Infarction Readmission-Reduction Program With Mortality and Readmission. Circulation: Cardiovascular Quality and Outcomes, 13(5), E006043. https://dx.doi.org/10.1161/CIRCOUTCOMES.119.006043	Wrong intervention
Wasfy J.H., Zigler C.M., Choirat C., Wang Y., Dominici F., & Yeh R.W. (2017). Readmission rates after passage of the hospital readmissions reduction program: A pre-post analysis. Annals of Internal Medicine, 166(5), 324-331. https://dx.doi.org/10.7326/M16-0185	Wrong intervention
Wiemken, T. L., Wright, M. O., & Johnston, K. J. (2020). Association of hospital-area deprivation with hospital performance on health care associated infection rates in 2018. American Journal of Infection Control, 48(12), 1478-1484. https://dx.doi.org/10.1016/j.ajic.2020.05.038	Wrong intervention
Wu, Y. F., Chen, M. Y., Chen, T. H., Wang, P. C., Peng, Y. S., & Lin, M. S. (2021). The effect of pay-for-performance program on infection events and mortality rate in diabetic patients: a nationwide population-based cohort study. BMC Health Serv. Res., 21(1). https://dx.doi.org/10.1186/s12913-021-06091-2	Wrong setting
Xia, Haohai, Li, Jia, Yang, Xinyi, Zeng, Yingchao, Shi, Lin, Li, Weibin, ..., & Yang, Lianping (2024). Effects of pay-for-performance based antimicrobial stewardship on	Wrong outcomes



Reference	Reason for exclusion
antimicrobial consumption and expenditure: An interrupted time series analysis.. Heliyon, 10(12), e32750. https://dx.doi.org/10.1016/j.heliyon.2024.e32750	
Yamada, Yutoku, Kotani, Toshiaki, Kishida, Shunji, Ogata, Yosuke, Okuwaki, Shun, Ohyama, Shuhei, ..., & Ohtori, Seiji (2025). Factors influencing the achievement of early surgery in proximal femoral fractures under a Japanese incentive policy.. Journal of orthopaedic science : official journal of the Japanese Orthopaedic Association, 30(3), 518-522. https://dx.doi.org/10.1016/j.jos.2024.08.001	Wrong study design
Yang, Ju Hyun, Kim, Sun Min, Han, Seung Jin, Knaak, Meredith, Yang, Gi Hwa, Lee, Kyoo Duck, ..., & Yoo, Myung Sook (2016). The impact of Value Incentive Program (VIP) on the quality of hospital care for acute stroke in Korea.. International journal for quality in health care : journal of the International Society for Quality in Health Care, 28(5), 580-585. https://dx.doi.org/10.1093/intqhc/mzw081	Wrong study design
Yen, F. S., Cheng-Chung Wei, J., Hung, Y. T., Hsu, C. C., & Hwu, C. M. (2022). Long-term outcomes of the pay-for-performance program for patients with young-onset (20–40 years of age) type 2 diabetes. Diabetes Res. Clin. Pract., 193. 10.1016/j.diabres.2022.110136	Wrong setting
Yen, F. S., Wei, J. C. C., Lin, S. Y., Hsu, J., Yeh, Y. K., Huang, Y. H., ..., & Hsu, C. C. (2025). The Impact of Pay-for-Performance Care on the Mortality and Cardiovascular Outcomes in Older Adults with Newly Diagnosed Type 2 Diabetes: A Nationwide Population-Based Cohort Study. Journal of the American Medical Directors Association, 26(2), 105382. https://dx.doi.org/10.1016/j.jamda.2024.105382	Wrong setting
Yen, S. M., Kung, P. T., Sheen, Y. J., Chiu, L. T., Xu, X. C., & Tsai, W. C. (2016). Factors related to continuing care and interruption of P4P program participation in patients with diabetes. Am. J. Managed Care, 22(1), e18-e30.	Wrong outcomes
Yu C., Li X., Liang H., Zhang Z., & Fang D. (2022). The Effects of Monetary Incentives on Physicians' Effort and Patient Satisfaction: Understanding the Links between Monetary Incentives and Physicians' Effort. International Journal of Environmental Research and Public Health, 19(20), 13075. https://dx.doi.org/10.3390/ijerph192013075	Wrong setting
Yu, Hung-Cheng, Tsai, Wen-Chen, & Kung, Pei-Tseng (2014). Does the Pay-for-Performance Programme Reduce the Emergency Department Visits for Hypoglycaemia in Type 2 Diabetic Patients?. Health Policy and Planning, 29(6), 732-741.	Wrong setting
Zaresani, A., & Scott, A. (2021). Is the evidence on the effectiveness of pay for performance schemes in healthcare changing? Evidence from a meta-regression analysis. BMC Health Serv. Res., 21(1). https://dx.doi.org/10.1186/s12913-021-06118-8	Wrong study design
Zhang, H. Y., Ramlogan, R. R., Talarico, R., Grammatopolous, G., Papp, S., & McIsaac, D. I. (2024). A quasi-experimental evaluation of the association between implementation of Quality-Based Procedures funding for hip fractures and improvements in processes and outcomes for hip fracture patients in Ontario: an interrupted time series analysis. Canadian Journal of Anesthesia, 71(6), 751-760. https://dx.doi.org/10.1007/s12630-024-02702-8	Wrong intervention

Appendix 5 Risk of bias assessments

Appendix 5.1 Risk of bias for interrupted time series studies

Short ID	Study design	RoB ITS - Other	RoB ITS - Selective	RoB ITS - Incomplete	RoB ITS - Knowledge	RoB ITS - Data collection	RoB ITS - Shape	RoB ITS - Intervention
Slawomirski et al. (2025) ¹	Interrupted time series (ITS)	Low risk	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk
Grimley et al. (2023) ²	Interrupted time series (ITS)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Unclear risk
Grimley et al. (2025) ³	Interrupted time series (ITS)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	High risk
Herbst et al. (2018) ⁴	Interrupted time series (ITS)	Low risk	Low risk	Unclear risk	High risk	Low risk	Low risk	Low risk
Minato et al. (2025) ⁵	Interrupted time series (ITS)	Low risk	Low risk	Unclear risk	Low risk	Low risk	Low risk	Low risk
Honda et al. (2025) ⁶	Interrupted time series (ITS)	High risk	Low risk	Unclear risk	Low risk	Low risk	Unclear risk	Unclear risk
Park et al. (2022) ⁷	Interrupted time series (ITS)	Low risk	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk
Ryan et al. (2017a) ⁸	Interrupted time series (ITS)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Unclear risk
Chhabra et al. (2019) ⁹	Interrupted time series (ITS)	Low risk	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk
Wasfy et al. (2019) ¹⁰	Interrupted time series (ITS)	Low risk	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk
Ramaswamy et al. (2021) ¹¹	Interrupted time series (ITS)	Low risk	Low risk	High risk	Low risk	Low risk	Low risk	High risk
Huckfeldt et al. (2019) ¹²	Interrupted time series (ITS)	High risk	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk
Salerno et al. (2017) ¹³	Interrupted time series (ITS)	Low risk	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk
Gupta et al. (2018) ¹⁴	Interrupted time series (ITS)	High risk	Low risk	Low risk	Low risk	Low risk	Low risk	High risk
Popescu et al. (2019) ¹⁵	Interrupted time series (ITS)	Low risk	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk
Besstremyannaya et al. (2022) ¹⁶	Other	High risk	High risk	Unclear risk	Unclear risk	Low risk	High risk	High risk
Alrawashdeh et al. (2021) ¹⁷	Interrupted time series (ITS)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	High risk
Vaz et al. (2015) ¹⁸	Interrupted time series (ITS)	Low risk	Low risk	Unclear risk	Low risk	Unclear risk	Low risk	High risk
Morgan et al. (2012) ¹⁹	Interrupted time series (ITS)	Low risk	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk
Waters et al. (2015) ²⁰	Interrupted time series (ITS)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	High risk
Schuller et al. (2014) ²¹	Interrupted time series (ITS)	Low risk	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk
Lee et al. (2012) ²²	Interrupted time series (ITS)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	High risk
Calderwood et al. (2016) ²³	Interrupted time series (ITS)	Low risk	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk



Short ID	Study design	RoB ITS - Other	RoB ITS - Selective	RoB ITS - Incomplete	RoB ITS - Knowledge	RoB ITS - Data collection	RoB ITS - Shape	RoB ITS - Intervention
Arntson (2019) ²⁴	Interrupted time series (ITS)	Low risk	Low risk	Low risk	Unclear risk	Unclear risk	Low risk	High risk
Rude et al. (2018) ²⁵	Other	High risk	Low risk	High risk	Low risk	Low risk	High risk	High risk
Hsu et al. (2020) ²⁶	Interrupted time series (ITS)	Low risk	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk
Benzer et al. (2013) ²⁷	Other	High risk	Low risk	High risk	Low risk	Low risk	Low risk	High risk
Andriole et al. (2010) ²⁸	Interrupted time series (ITS)	High risk	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk
Bischoff et al. (2013) ²⁹	Other	High risk	Low risk	Unclear risk	High risk	High risk	High risk	High risk
Peasah et al. (2013) ³⁰	Interrupted time series (ITS)	High risk	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk
Calikoglu et al. (2012) ³¹	Interrupted time series (ITS)	High risk	Low risk	Unclear risk	Low risk	Low risk	High risk	High risk
Ibrahim et al. (2017) ³²	Interrupted time series (ITS)	High risk	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk
Kalata et al. (2024) ³³	Interrupted time series (ITS)	High risk	Low risk	Low risk	High risk	Low risk	Low risk	High risk
Barbash et al. (2017) ³⁴	Interrupted time series (ITS)	High risk	Low risk	Unclear risk	Low risk	High risk	Low risk	High risk
Staples et al. (2021) ³⁵	Interrupted time series (ITS)	High risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk
Waters et al. (2022) ³⁶	Interrupted time series (ITS)	High risk	Low risk	Unclear risk	Low risk	Low risk	Low risk	High risk

Appendix 5.2 Risk of bias for studies with a separate control group

Short ID	Study design	RoB - Other	RoB - Selective	RoB - Contamination	RoB - Knowledge	RoB - Incomplete	RoB - Baseline char	RoB - Baseline out	RoB - Allocation	RoB - Random
Vermeulen et al. (2015) ³⁷	Controlled before-after (CBA)	High risk	Low risk	Low risk	Low risk	Low risk	High risk	High risk	High risk	High risk
Metcalfe et al. (2019) ³⁸	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Unclear risk	Low risk	Low risk	High risk	High risk
Grašič et al. (2025) ³⁹	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	High risk
Zogg et al. (2022) ⁴⁰	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	High risk
Núñez-Elvira et al. (2025) ⁴¹	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Unclear risk	Low risk	Low risk	High risk	High risk
Feng et al. (2024) ⁴²	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Unclear risk	Low risk	Low risk	High risk	High risk
Meacock et al. (2014) ⁴³	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Unclear risk	Unclear risk	Low risk	High risk	High risk
Sutton et al. (2012) ⁴⁴	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Unclear risk	Low risk	Low risk	High risk	High risk
Britteon et al. (2025) ⁴⁵	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	High risk
Kristensen et al. (2014) ⁴⁶	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Unclear risk	Low risk	Low risk	High risk	High risk
McDonald et al. (2015) ⁴⁷	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	High risk
Lalloué et al. (2017) ⁴⁸	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Unclear risk	Unclear risk	Low risk	High risk	High risk
Peluso et al. (2019) ⁴⁹	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Unclear risk	High risk	Low risk	High risk	High risk
Chan and Hsu (2019) ⁵⁰	Controlled before-after (CBA)	Low risk	Low risk	Unclear risk	Low risk	Unclear risk	Unclear risk	Low risk	High risk	High risk
Kuo et al. (2011) ⁵¹	Other	High risk	Low risk	Low risk	Low risk	Unclear risk	High risk	High risk	High risk	High risk
Chu et al. (2025) ⁵²	Controlled before-after (CBA)	High risk	Low risk	Low risk	Low risk	Unclear risk	Low risk	Low risk	High risk	High risk
Sabbatini et al. (2022) ⁵³	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Unclear risk	Low risk	Low risk	High risk	High risk
Ziedan and Kaestner (2021) ⁵⁴	Other	Low risk	Low risk	Low risk	Low risk	Unclear risk	Unclear risk	High risk	High risk	High risk
Mehtsun et al. (2018) ⁵⁵	Controlled before-after (CBA)	High risk	Low risk	Low risk	Low risk	Low risk	Unclear risk	Low risk	High risk	High risk
Gupta (2021) ⁵⁶	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Low risk	Unclear risk	Low risk	High risk	High risk
Banerjee et al. (2022) ⁵⁷	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Unclear risk	High risk	Low risk	High risk	High risk

Short ID	Study design	RoB - Other	RoB - Selective	RoB - Contamination	RoB - Knowledge	RoB - Incomplete	RoB - Baseline char	RoB - Baseline out	RoB - Allocation	RoB - Random
Nathan et al. (2020) ⁵⁸	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Unclear risk	Unclear risk	Low risk	High risk	High risk
Desai et al. (2016) ⁵⁹	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Unclear risk	Unclear risk	Low risk	High risk	High risk
Zuckerman et al. (2016) ⁶⁰	Controlled before-after (CBA)	High risk	Low risk	Low risk	Low risk	Unclear risk	Unclear risk	Low risk	High risk	High risk
Figuroa et al. (2016) ⁶¹	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Unclear risk	High risk	Low risk	High risk	High risk
Ryan et al. (2015) ⁶²	Controlled before-after (CBA)	Low risk	Low risk	Unclear risk	Unclear risk	Unclear risk	Low risk	Low risk	High risk	High risk
Kyalwazi et al. (2024) ⁶³	Controlled before-after (CBA)	High risk	Low risk	Low risk	Low risk	Unclear risk	Unclear risk	Low risk	High risk	High risk
Papanicolas et al. (2017) ⁶⁴	Controlled before-after (CBA)	High risk	Low risk	Low risk	High risk	Low risk	High risk	Low risk	High risk	High risk
Banerjee et al. (2019) ⁶⁵	Controlled before-after (CBA)	High risk	Low risk	Low risk	Low risk	Low risk	High risk	High risk	High risk	High risk
Ryan et al. (2017b) ⁶⁶	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Unclear risk	Low risk	Low risk	High risk	High risk
Kim et al. (2021) ⁶⁷	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Unclear risk	Low risk	High risk	High risk	High risk
Gidwani and Bhattacharya, (2015) ⁶⁸	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Unclear risk	Low risk	Low risk	High risk	High risk
Kwong et al. (2017) ⁶⁹	Controlled before-after (CBA)	Low risk	Low risk	High risk	Low risk	Unclear risk	High risk	Low risk	High risk	High risk
Banerjee et al. (2021) ⁷⁰	Controlled before-after (CBA)	Low risk	Low risk	Unclear risk	Low risk	Unclear risk	High risk	Low risk	High risk	High risk
Epstein et al. (2014a) ⁷¹	Controlled before-after (CBA)	High risk	Low risk	Low risk	Low risk	Unclear risk	High risk	High risk	High risk	High risk
Nicholas et al. (2011) ⁷²	Controlled before-after (CBA)	High risk	Low risk	Low risk	Low risk	Unclear risk	High risk	High risk	High risk	High risk
Shih et al. (2014) ⁷³	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Unclear risk	Low risk	Low risk	High risk	High risk
Ryan et al. (2012) ⁷⁴	Controlled before-after (CBA)	High risk	Low risk	Low risk	Low risk	Unclear risk	Low risk	Low risk	High risk	High risk
Ryan (2010) ⁷⁵	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	High risk	High risk
Jha et al. (2010) ⁷⁶	Controlled before-after (CBA)	High risk	Low risk	Low risk	Low risk	Unclear risk	High risk	High risk	High risk	High risk
Ryan (2009) ⁷⁷	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Unclear risk	High risk	Low risk	High risk	High risk
Epstein et al. (2014b) ⁷⁸	Controlled before-after (CBA)	High risk	Low risk	Low risk	Low risk	Unclear risk	Low risk	High risk	High risk	High risk
Jha et al. (2012) ⁷⁹	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Unclear risk	High risk	Low risk	High risk	High risk
Werner et al. (2011) ⁸⁰	Other	High risk	Low risk	Low risk	Low risk	Unclear risk	Unclear risk	Low risk	High risk	High risk

Short ID	Study design	RoB - Other	RoB - Selective	RoB - Contamination	RoB - Knowledge	RoB - Incomplete	RoB - Baseline char	RoB - Baseline out	RoB - Allocation	RoB - Random
Bonfrer et al. (2018) ⁸¹	Other	Low risk	Low risk	Low risk	Low risk	Unclear risk	High risk	High risk	High risk	High risk
Hasan et al. (2020) ⁸²	Controlled before-after (CBA)	High risk	Low risk	High risk	Low risk	Unclear risk	High risk	Unclear risk	High risk	High risk
Deore et al. (2023) ⁸³	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Unclear risk	Unclear risk	Low risk	High risk	High risk
Ryan and Blustein (2011) ⁸⁴	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Unclear risk	Low risk	Low risk	High risk	High risk
Chakravarty et al. (2022) ⁸⁵	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Unclear risk	High risk	High risk	High risk	High risk
Thirukumaran et al. (2018) ⁸⁶	Controlled before-after (CBA)	Low risk	Low risk	High risk	Low risk	Low risk	Unclear risk	Low risk	High risk	High risk
McGarry et al. (2016) ⁸⁷	Controlled before-after (CBA)	High risk	Low risk	High risk	Low risk	Unclear risk	Unclear risk	Low risk	High risk	High risk
Thirukumaran et al. (2017) ⁸⁸	Controlled before-after (CBA)	Low risk	Low risk	Low risk	Low risk	Unclear risk	Unclear risk	Low risk	High risk	High risk
Herrin et al. (2008) ⁸⁹	Other	High risk	Low risk	Low risk	High risk	Unclear risk	Unclear risk	Unclear risk	High risk	High risk
Mellor et al. (2017) ⁹⁰	Controlled before-after (CBA)	Low risk	Low risk	Unclear risk	Low risk	Unclear risk	Unclear risk	Low risk	High risk	High risk



Appendix 6 Regression sensitivity analyses

Appendix 6.1 Outcome definition: positive and statistically significant

	Outcome-Level	Study-Level
Financial Incentive		
Bonus/reward payment	-0.0296 (0.1628)	-0.0069 (0.3536)
Penalty/withholding	-0.1648 (0.1896)	-0.0674 (0.3284)
Tournament/ranking	-0.1006 (0.1867)	-0.1202 (0.1684)
Threshold-based payment	0.1493 (0.0997)	0.1617 (0.1011)
Payment frequency (Reference: Variable/Unknown)		
High frequency	-0.0564 (0.1192)	-0.0445 (0.1256)
Medium frequency	0.0072 (0.2059)	0.0838 (0.1996)
Low frequency	-0.0691 (0.1143)	-0.0705 (0.1224)
Participation (Reference: Mandatory)		
Voluntary	-0.1304 (0.0859)	-0.0380 (0.1006)
Outcome (Reference: Non-incentivised)		
Outcome incentivised	0.1069 (0.0438)**	-0.1192 (0.1183)
Study design (Reference: Interrupted time series)		
Controlled before-after	-0.0613 (0.0896)	-0.0481 (0.0884)
Other	-0.1628 (0.1231)	-0.0723 (0.1411)
Observations	627	76

Notes: Standard errors in parentheses; Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Outcome-level analysis: Marginal effects on probability of positive effect (percentage points).

Study-level: Effects on proportion of positive outcomes per study.

Both models include random intercepts (study and programme for outcome-level; programme for study-level).

Appendix 6.2 One outcome per study

	Outcome-Level
Financial Incentive	
Bonus/reward payment	Marginal effects not estimable
Penalty/withholding	Marginal effects not estimable
Tournament/ranking	0.0318 (0.3229)
Threshold-based payment	0.3295 (0.1788)*
Payment frequency (Reference: Variable/Unknown)	
High frequency	-0.0566 (0.1719)
Medium frequency	Marginal effects not estimable
Low frequency	-0.1543 (0.1985)
Participation (Reference: Mandatory)	
Voluntary	0.0646 (0.1699)
Outcome (Reference: Non-incentivised)	
Outcome incentivised	-0.2590 (0.1634)
Study design (Reference: Interrupted time series)	
Controlled before-after	-0.1761 (0.1277)
Other	Marginal effects not estimable
Observations	69

Notes: Standard errors in parentheses; Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Outcome-level analysis: Marginal effects on probability of positive effect (percentage points).

Model includes random intercept for programme.



Appendix 6.3 Payment frequency grouping

	Outcome-Level
Financial Incentive	
Bonus/reward payment	-0.0483 (0.1449)
Penalty/withholding	-0.1067 (0.1341)
Tournament/ranking	-0.0597 (0.1773)
Threshold-based payment	0.1405 (0.0952)
Payment frequency (Reference: Variable/Unknown)	
Ongoing	0.0141 (0.1183)
Quarterly	-0.1691 (0.2756)
Semi-annual	-0.1081 (0.2225)
Unknown	-0.0836 (0.1813)
Varying	0.0850 (0.0939)
Participation (Reference: Mandatory)	
Voluntary	-0.0501 (0.0826)
Outcome (Reference: Non-incentivised)	
Outcome incentivised	0.0778 (0.0535)
Study design (Reference: Interrupted time series)	
Controlled before-after	-0.1052 (0.0801)
Other	-0.0341 (0.1329)
Observations	627

Notes: Standard errors in parentheses; Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Outcome-level analysis: Marginal effects on probability of positive effect (percentage points).

Model includes random intercepts for study and programme.

Appendix 6.4 Risk of bias classification

	Outcome-Level
Financial Incentive	
Bonus/reward payment	-0.0423 (0.1347)
Penalty/withholding	-0.1275 (0.1194)
Tournament/ranking	-0.1018 (0.1658)
Threshold-based payment	0.1334 (0.0866)
Payment frequency (Reference: Variable/Unknown)	
High frequency	0.0073 (0.1074)
Medium frequency	-0.0525 (0.1738)
Low frequency	0.0163 (0.0968)
Participation (Reference: Mandatory)	
Voluntary	-0.0551 (0.0816)
Outcome (Reference: Non-incentivised)	
Outcome incentivised	0.0827 (0.0531)
Risk of bias (RoB) classification (Reference: Low RoB (0 high-risk flags))	
Moderate RoB (1-2 high-risk)	0.1572 (0.1462)
High RoB (3+ high-risk)	0.0659 (0.1519)
Observations	627

Notes: Standard errors in parentheses; Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Outcome-level analysis: Marginal effects on probability of positive effect (percentage points).

Model includes random intercepts for study and programme.

Appendix 6.5 2-level model

	Outcome-Level
Financial Incentive	
Bonus/reward payment	-0.0911 (0.1360)
Penalty/withholding	-0.1128 (0.1298)
Tournament/ranking	-0.0037 (0.1600)
Threshold-based payment	0.1766 (0.0853)**
Payment frequency (Reference: Variable/Unknown)	
High frequency	0.0022 (0.1046)
Medium frequency	-0.1141 (0.1783)
Low frequency	-0.0547 (0.0919)
Participation (Reference: Mandatory)	
Voluntary	-0.0297 (0.0802)
Outcome (Reference: Non-incentivised)	
Outcome incentivised	0.0751 (0.0533)
Study design (Reference: Interrupted time series)	
Controlled before-after	-0.0974 (0.0784)
Other	-0.0235 (0.1190)
Observations	627

Notes: Standard errors in parentheses; Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

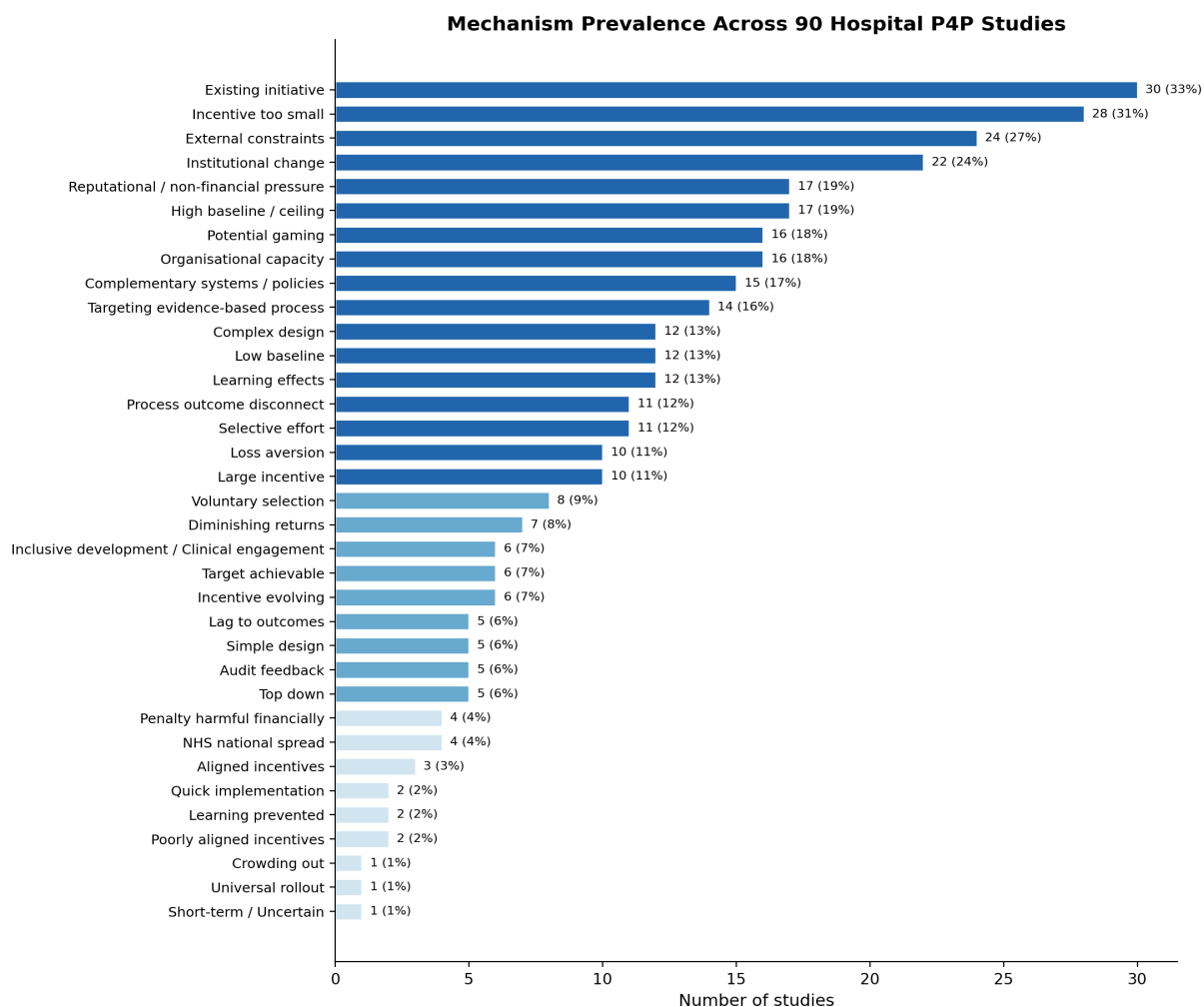
Outcome-level analysis: Marginal effects on probability of positive effect (percentage points).

Study-level: Effects on proportion of positive outcomes per study.

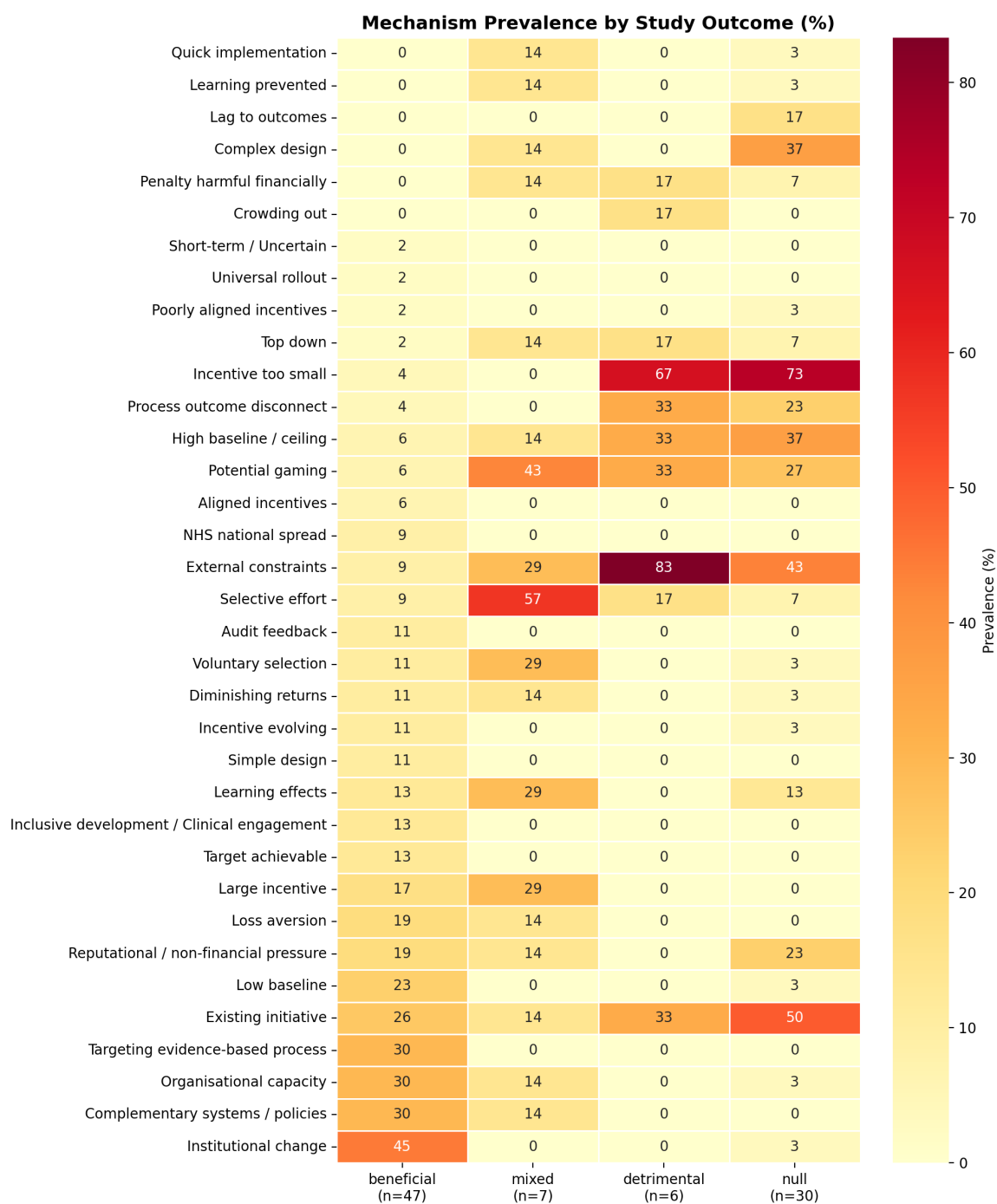
Model includes random intercept for study.



Appendix 7 Coded mechanism prevalence across all included studies



Appendix 8 Heatmap showing mechanism prevalence by overall study outcome classification





Appendix 9 Informal PROGRESS-PLUS equity relevant subgroup impacts examined by study

Place of residence (n=4 studies)

Study	Programme	Finding	Significant	Direction
<i>Grimley et al. (2023)</i> ²	QIP (Australia)	Larger effects for regional/rural residents (41pp vs 24pp)	Yes	Pro-equity
<i>Gupta et al. (2018)</i> ¹⁴	HRRP	No differential effects by rural/urban	No	No differential
<i>Papanicolas et al. (2017)</i> ⁶⁴	HVBP	No differential effects	No	No differential
<i>Schuller et al. (2014)</i> ²¹	HAC-POA	No differential effects	No	No differential

Race/Ethnicity (n=6 studies)

Study	Programme	Finding	Significant	Direction
<i>Huckfeldt et al. (2019)</i> ¹²	HRRP	Larger mortality reduction for Black patients with AMI	Yes	Pro-equity
<i>Epstein et al. (2014a)</i> ⁷¹	Premier HQID	Racial mortality gap decreased more in P4P hospitals	Yes	Pro-equity
<i>Gupta et al. (2018)</i> ¹⁴	HRRP	Largest increase in 30-day mortality among Hispanics	Yes	Anti-equity
<i>Kyalwazi et al. (2024)</i> ⁶³	HVBP	Widening mortality gaps for Black adults with pneumonia	Yes	Anti-equity
<i>Ryan (2010)</i> ⁷⁵	Premier HQID	Little evidence of reduced access for minorities	No	No differential
<i>Popescu et al. (2019)</i> ¹⁵	HRRP	No differences between Black and white patients	No	No differential

Socioeconomic Status (n=6 studies)

Study	Programme	Finding	Significant	Direction
<i>Jha et al. (2010)</i> ⁷⁶	Premier HQID	Greater improvements for hospitals serving poor patients	Yes	Pro-equity
<i>Banerjee et al. (2022)</i> ⁵⁷	HRRP	Larger readmission reduction in safety-net hospitals	Yes	Pro-equity
<i>Salerno et al. (2017)</i> ¹³	HRRP	Larger effects for safety-net hospitals	Yes	Pro-equity
<i>Núñez-Elvira et al. (2025)</i> ⁴¹	PSS-CQUIN	Larger effects for high-SES patients (2.4h vs 1.3h) in discharge delay for trauma care; No differential effects for urgent coronary bypass	Yes/No	Mixed
<i>Wasfy et al. (2019)</i> ¹⁰	HRRP	Mixed: pro-equity for heart failure, anti-equity for pneumonia	Yes	Mixed
<i>Hsu et al. (2020)</i> ²⁶	HACRP/HVBP	No differential effects; disparities persist	No	No differential

Appendix 10 Informal cost estimates mentioned by studies

Study	Programme	Note
<i>Staples et al. (2021)</i> ³⁵	Not specified	Informal estimate: not cost-effective (increased costs, no impact on readmissions)
<i>Metcalfe et al. (2019)</i> ³⁸	Best Practice Tariff (BPT)	Discussion only: suggested improved care at reduced cost
<i>Gupta (2021)</i> ⁵⁶	HRRP	Estimated \$110m avoided hospital payments annually
<i>Calikoglu et al. (2012)</i> ³¹	Maryland QBR/HAC Programs	Estimated \$110.9m savings over 2 years
<i>Chu et al. (2025)</i> ⁵²	ED Quality Improvement Program	Implied cost savings from shorter LOS (no figures)
<i>Chhabra et al. (2019)</i> ⁹	HRRP	Examined Medicare episode spending as spillover, decreased
<i>Gidwani & Bhattacharya (2015)</i> ⁶⁸	HAC-POA Program	Speculated major cost savings from reduced hospital-acquired infections



2 SUPPLEMENT TO CHAPTER 4 – LESSONS LEARNED FROM THE DESIGN AND IMPLEMENTATION OF FIVE P4P PROGRAMMES IN ACUTE HOSPITALS

2.1 Medicare Hospital Value-Based Purchasing (HVBP) programme in the US

2.1.1 *Brief overview of the financing methods for acute hospitals*

Medicare is a federal programme administrated by the Centers for Medicare and Medicaid Services (CMS), a component of the US Department of Health and Human Services. It is a social health insurance programme designed for people aged 65 and over and younger people with certain disabilities or end-stage renal disease.⁹¹ In 2025, 66.5 million Americans are enrolled in Medicare (11% are younger than 65).⁹² Medicare is divided into four parts, of which part A covers hospitals, skilled nursing facilities, and hospice services. This part is mainly (89% in 2022) funded through payroll tax.⁹³ In addition, part of revenues (8% in 2022) comes from income taxes on social security benefits received by high-income beneficiaries.

Hospital payments are made using the Inpatient Prospective Payment System (IPPS), which pays a predetermined tariff based on diagnosis related groups (Medicare Severity Diagnosis Related Groups, MS-DRGs).⁹⁴ Each stay is assigned an MS-DRG based on the patient's diagnosis, the procedures performed, complicating conditions, age, sex, and discharge status. The amount paid for a stay is based on the average national resource use for treating patients with similar MS-DRG. Specifically, each MS-DRG is assigned a weight that reflects the relative amount of resources required to treat cases within that MS-DRG, compared to the average resources used for cases across all MS-DRGs. Weights are revised annually, allowing adaptations to changing technology. For the services they provide during the stay, physicians are paid separately on a fee-for-service basis. The IPPS payment covers hospital inpatient operating and capital-related costs. Hospitals may also receive add-on payments for new medical services or technologies before costs are included in the MS-DRG weights. Outlier payments are also foreseen for stays with extreme costs.

In 2010, the Affordable Care Act (ACA) made a number of changes to the Medicare programme, aimed to reduce costs and improve quality and efficiency.⁹⁵ In particular, the Act slowed annual increases in Medicare part A payments.⁹⁶ It also introduced several mandatory payment reform initiatives that tie payments to quality.⁹⁶ The Hospital Readmission Reduction (HRR) programme penalises hospitals with high 30-day readmission rates for six medical conditions. The Hospital-Acquired Conditions Reduction (HACR) programme imposes a financial penalty to hospitals in the top quartile for preventable hospital-acquired conditions. Finally, the Hospital Value-Based Purchasing (HVBP) programme adjusts payments to hospitals according to their performance. The HVBP programme was first implemented in 2012 (fiscal year 2012-2013).

2.1.2 *Objectives and rationale of the programme*

Although many attempts have been made since the 1990s to decrease healthcare costs and improve quality, the Affordable Care Act launched unprecedented reforms to increase healthcare value.⁹⁷ The need for change was apparent as, despite having the world highest healthcare spendings, the US ranked the lowest among comparable nations on many health performance indicators.^{98, 99} Hospital costs in particular were rapidly rising, though at a slightly slower pace than before the adoption of the DRG system in the 1980s.¹⁰⁰

The objective was to shift financing from volume-based to value-based, transforming Medicare from a passive payer to an active purchaser of care.¹⁰¹ In particular, the HVBP programme tied financing with performance measures, with the ambition to improve patients' clinical outcome and experience.¹⁰¹

The programme was built on the Premier Hospital Quality Incentive Demonstration (HQID), a 6-year demonstration model, that was applied to voluntary hospitals from 2003 to 2009. Under HQID, hospitals received incentive payments based on quality measures associated with certain clinical conditions (acute myocardial infarction, isolated coronary artery bypass graft, heart failure, pneumonia, hip and knee replacement, ischemic stroke).¹⁰² Hospitals in the top decile received a 2% bonus of the DRG-based payment for all Medicare patients with the concerned condition.¹⁰³ For hospitals in the second decile, the bonus was 1%. The HVBP programme is largely based on the HQID model and employs several of the same performance measures.¹⁰⁰

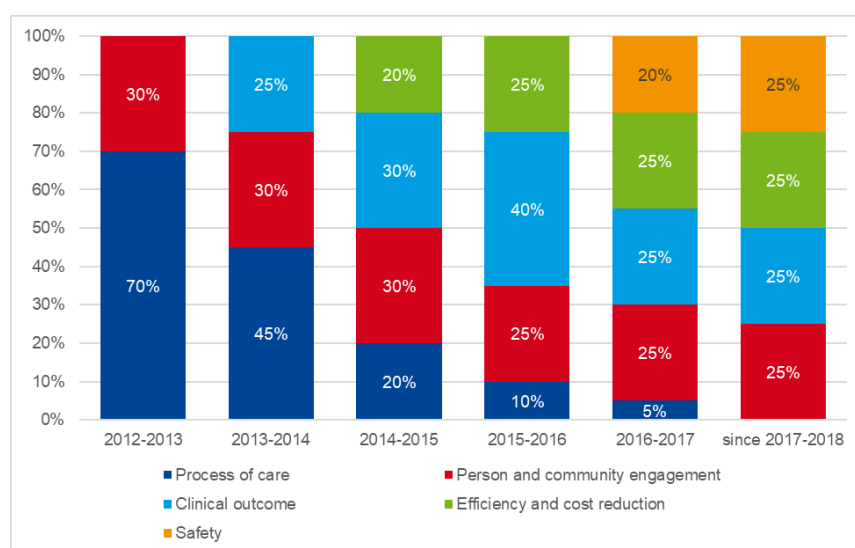
2.1.3 Design

2.1.3.1 Indicator design

DOMAINS

In the HVBP programme, performance is assessed using an approved set of quality measures organised into specific domains. Initially (in 2012-2013), two domains were evaluated: clinical process of care and patient experience (called 'person and community engagement'). In 2013-2014, outcome indicators were added, in 2014-2015 the efficiency domain (called 'efficiency and cost reduction') was included and in 2016-2017 a safety domain was also added. From 2017-2018 onwards, four domains are assessed: clinical outcomes, person and community engagement, safety, and efficiency and cost reduction. Figure 1 shows this evolution along with the weight assigned to each domain. From 2017-2018 onwards, all four domains have equal weight.

Figure 1 – Domains assessed in the HVBP programme, 2012-2026



Source: adapted from Alvarenga and Sherpa (2025)¹⁰⁴

INDICATORS

Table 1 shows the indicators currently used in the HVBP programme. The clinical outcomes domain contains five mortality indicators and one indicator related to hip or knee replacement complications. Indicator measures are calculated based on a data collection period of 36 months (e.g. July 2021 to June 2024 for mortality indicators for HVBP payments in 2025-2026).^{104, 105} Mortality indicators are condition-specific 30-day (from the start of a hospital admission) risk-standardised mortality rates.¹⁰⁶ The complication indicator is a risk-standardised rate of occurrence of at least one of eight possible complications (including death) during a (complication-specific) time period following hip or knee replacement.¹⁰⁷



The person and community engagement domain contains eight indicators retrieved from the Hospital Consumer Assessment Healthcare Providers and Systems (HCAHPS) survey. Each of these indicators has equal weight within the domain.¹⁰⁸ The HCAHPS survey is administered to a random sample of adult inpatients after their discharge (between 48 hours and 42 days).¹⁰⁹ Results are adjusted for the effects of the mode of survey administration as well as patient characteristics (age, gender, language, education, self-rated health and mental health, etc.).¹¹⁰ These adjustments are made to ensure accurate comparisons among hospitals, independent of factors that are not directly related to hospital performance but which may affect how patients answer survey items.¹⁰⁹ Data from the last full calendar year available are used to calculate the indicators (e.g. year 2024 for HVBP payments in 2025-2026).

The safety domain contains five healthcare-associated infection indicators. These indicators are standardised infection ratios indicating how frequently patients in a specific hospital acquire certain infections during their treatment, compared to similar hospitals.¹¹¹ The collection period lasts 12 months.¹⁰⁵ Since 2025-2026, a process indicator related to severe sepsis and septic shock management is also included in the safety domain.

The efficiency and cost reduction domain contains only one indicator. The Medicare Spending Per Beneficiary (MSPB) indicator is a risk-adjusted and price-standardised measure of payments for services provided to a beneficiary during a period beginning three days prior to an inpatient hospital admission and ending 30 days after discharge.¹⁰⁵

It should be noted that safety indicators and indicators in the person and community engagement domain are measured for all patients, not limited to Medicare patients.¹⁰⁴

Table 1 – Indicators included in the HVBP programme 2025-2026

Indicator	Definition
Clinical outcome domain	
Acute myocardial infarction (AMI) 30-day mortality rate	Mortality rate showing whether a patient with an AMI diagnosis died within 30 days of their hospitalisation
Coronary artery bypass graft (CABG) 30-day mortality rate	Mortality rate showing whether a patient after a CABG surgery died within 30 days of their hospitalisation
Chronic obstructive pulmonary disease (COPD) 30-day mortality rate	Mortality rate showing whether a patient with a COPD diagnosis died within 30 days of their hospitalisation
Heart failure (HF) 30-day mortality rate	Mortality rate showing whether a patient with a HF diagnosis died within 30 days of their hospitalisation
Pneumonia (PN) 30-day mortality rate	Mortality rate showing whether a patient with a PN diagnosis died within 30 days of their hospitalisation
Complication rate following total hip/knee arthroplasty	Risk-standardised complication rate showing whether a patient who received a total hip or knee replacement experienced 1 of 8 complications within a specified time period
Person and community engagement domain	
Communication with nurses	Percentage of patients who reported that their nurses 'always' communicated well.
Communication with doctors	Percentage of patients who reported that their doctors 'always' communicated well
Responsiveness of hospital staff	Percentage of patients who reported that hospital staff were 'always' responsive to their needs

Cleanliness and quietness of hospital environment	Percentage of patients who reported that the hospital environment was 'always' clean and quiet
Communication about medicines	Percentage of patients who reported that staff 'always' explained about medicines
Care Transition	Percentage of patients who reported they 'strongly agree' that they understood their care when they left the hospital
Discharge Information	Percentage of patients who reported that they were given information about what to do during their recovery at home
Overall rating of hospital	Percentage of patients whose overall rating of the hospital was 9 or 10 on a scale from 0 (low) to 10 (high)
Safety domain	
Central Line-Associated Bloodstream Infection (CLABSI)	Actual number of CLABSIs compared with the predicted number of infections based on the baseline US experience
Catheter-Associated Urinary Tract Infection (CAUTI)	Actual number of CAUTIs compared with the predicted number of infections based on the baseline US experience
Surgical Site Infection (SSI)	Actual number of SSIs from abdominal hysterectomies or colon surgeries compared with the predicted number of infections based on the baseline US experience
Methicillin-Resistant Staphylococcus aureus (MRSA)	Actual number of MRSA blood laboratory-identified events compared with the predicted number of infections based on the baseline US experience.
Clostridium difficile Infection (CDI)	Actual number of CDI laboratory-identified events compared with the predicted number of infections based on the baseline US experience
Severe sepsis and septic shock management bundle	Percentage of patients with severe sepsis or septic shock who received every required element of the SEP-1 bundle
Efficiency and cost reduction domain	
Medicare Spending Per Beneficiary (MSPB) measure	Assessment of payment for services provided to a beneficiary during a spending-per-beneficiary episode that spans from 3 days prior to an inpatient hospital admission through 30 days after discharge. Payments are standardised and adjusted so that variation in geographic costs and variation in patient health status are removed

Sources: U.S. Department of Health and Human Services¹¹² and CMS¹¹³

SELECTION OF INDICATORS

For the initial year of the programme (2012-2013), indicators were selected from the 45 measures used in the Hospital Inpatient Quality Reporting (IQR) programme (see section 2.1.3.7).^{114, 115} This programme contains indicators generally endorsed by the National Quality Forum (NQF), a voluntary consensus standard-setting organisation that includes representatives of various stakeholder groups (users, purchasers, providers, academic, clinical organisations, etc.). The IQR programme includes primarily quality measures (aiming effective, safe, timely, efficient, patient centred and efficient healthcare) that assess performance on:¹¹⁵

- Conditions resulting in the highest mortality and morbidity in the Medicare population
- Conditions that are high volume and high cost for Medicare
- Conditions for which large cost and treatment variations have been recorded, despite established clinical guidelines.

For the HVBP programme, readmission measures (three indicators) were not included. Seven IQR indicators were excluded because hospitals' performance was considered 'topped out', i.e. almost all hospitals achieved a similarly high level of performance. The criteria for an indicator to be considered topped out were that the 75th and 90th top percentiles were statistically indistinguishable and the truncated coefficient of variation (in which the 5% hospitals with the highest and the 5% hospitals with the lowest score are set aside) was lower than 0.1. In addition, eight indicators were excluded because their results were not publicly reported for long enough (at least one year before the evaluation period). It was decided to include three mortality indicators, but their introduction was delayed by one year, in order to ensure a sufficiently long evaluation period. Three structural indicators from the IQR programme were also excluded, as they were not judged suitable for the HVBP programme. Similarly, two indicators that were added to the set of IQR surgical infection indicators were not retained. Finally, one indicator on timing of receipt of initial antibiotic following hospital arrival was excluded because it could lead to inappropriate antibiotic use.

After consideration of the public comments, three additional indicators were found to be topped out when using more recent data and two additional indicators were excluded because they were to be removed from the IQR programme in the near future.¹¹⁵ Ultimately, 13 indicators were included at the start of the HVBP programme.

The indicator set is evaluated each year, following a similar process. Formal criteria are established for the removal or replacement of an indicator:¹¹⁶

- When the indicator is topped out
- When the indicator does not align with current guidelines or practice
- When another (broader or more proximal in time) indicator is available
- When performance or improvement on the indicator does not translate into better patient outcomes
- When another indicator is available that is more strongly associated with desired patient outcomes for the particular topic
- When collection or public reporting of the indicator lead to negative unintended consequences
- When it is not feasible to implement the indicator specifications
- When the costs associated with an indicator are larger than the benefit of using it in the programme.

Table 2 shows the evolution of the included indicators.

Table 2 – Indicators included in the HVBP programme, 2012-2026

	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023*	2023-2024	2024-2025	2025-2026
Acute Myocardial Infarction														
Fibrinolytic therapy received within 30 minutes of hospital arrival (AMI-7a)	x	x	x	x	x									
Timing of receipt of primary percutaneous coronary intervention (AMI-8a)	x	x	x											
Heart Failure														
Discharge instructions (HF-1)	x	x	x											
Pneumonia														

Blood culture performed before first antibiotic received in hospital (PN-3b)	x	x	x														
Appropriate initial antibiotic selection (PN-6)	x	x	x	x													
Healthcare-associated infections																	
Prophylactic antibiotic received within 1 hour prior to surgical incision (SCIP-Inf-1)	x	x	x														
Prophylactic antibiotic selection for surgical patients (SCIP-Inf-2)	x	x	x	x													
Prophylactic antibiotic discontinued within 24 hours after surgery end time (SCIP-Inf-3)	x	x	x	x													
Cardiac surgery patients controlled 6AM postoperative serum glucose (SCIP-Inf-4)	x	x	x														
Postoperative urinary catheter removal on post operative day 1 or 2 (SCIP-Inf-9)		x	x	x													
Surgery																	
Surgery patients on a beta blocker prior to arrival who received a beta blocker during the perioperative period (SCIP-Card-2)	x	x	x	x													
Surgery patients with recommended venous thromboembolism prophylaxis ordered (SCIP-VTE-1)	x	x															
Surgery patients who received appropriate venous thromboembolism prophylaxis within 24 hours prior to surgery to 24 hours after surgery (SCIP-VTE-2)	x	x	x	x													
Process																	
Influenza immunisation (IMM-2)				x	x												
Elective delivery prior to 39 completed weeks gestation (PC-01)					x	x	x	x									
Patient centredness																	
Hospital Consumer Assessment Healthcare Providers and Systems (HCAHPS)**	x	x	x	x	x	x	x	x	x	x			x	x	x		
Care Transition Measure (CTM)***						x	x	x	x	x			x	x	x		
Safety																	
Catheter-Associated Urinary Tract Infection (CAUTI)				x	x	x	x	x	x	x			x	x	x		
Central Line-Associated Bloodstream Infection (CLABSI)			x	x	x	x	x	x	x	x			x	x	x		
Clostridium difficile Infection (CDI)					x	x	x	x	x	x			x	x	x		
Complication/patient safety for selected indicators (composite) (PSI)			x	x	x	x											
Surgical Site Infection (SSI)				x	x												
Methicillin-Resistant Staphylococcus aureus (MRSA)					x	x	x	x	x	x			x	x	x		
Colon / abdominal hysterectomy surgical site infection (SSI)						x	x	x	x	x			x	x	x		
Severe sepsis and septic shock: management bundle (SEP-1)																	x
Clinical outcome																	



Acute myocardial infarction (AMI) 30-day mortality rate		x	x	x	x	x	x	x	x	x	x	x	x	x
Heart failure (HF) 30-day mortality rate		x	x	x	x	x	x	x	x	x	x	x	x	x
Pneumonia (PN) 30-day mortality rate		x	x	x	x	x	x	x	x		x	x	x	
Chronic obstructive pulmonary disease (COPD) 30-day mortality rate									x	x	x	x	x	x
Coronary artery bypass graft (CABG) 30-day mortality rate										x	x	x	x	x
Complication rate following total hip/knee arthroplasty							x	x	x	x	x	x	x	x
Efficiency														
Medicare Spending Per Beneficiary (MSPB)			x	x	x	x	x	x	x	x	x	x	x	x

Notes: * COVID-19 impacted data; ** HCAHPS includes several indicators that also changed over time; *** From 2018-2019 the Care Transition Measure is included within the HCAHPS indicator set. Sources: U.S. Department of Health and Human Services^{114, 115, 117-127}

FUTURE EVOLUTION

The list of indicators that will be used up to 2030 was established in 2024.¹²⁸ No major changes are foreseen for indicators in the clinical outcomes, safety and efficiency domains. But, because of changes in the HCAHPS survey, adaptations were made to the person and community engagement domain. In 2026-2027, 2027-2028 and 2028-2029, only six indicators will be included in this domain, each with equal weight. The current indicators 'responsiveness of hospital staff' and 'care transition' will be removed. In 2029-2030, nine indicators will be included in the domain, each with equal weight: communication with nurses, communication with doctors, communication about medicines, discharge information, responsiveness of hospital staff, restfulness of hospital environment, care coordination, an indicator that combines the cleanliness and information about symptoms items, and one global item (overall rating of hospital).¹⁰⁸ Changes in the HCAHPS survey are research-driven and reflect feedback from both patients and healthcare providers.¹²⁹

2.1.3.2 Target definition and incentive structure

For each hospital, the level of financial incentive depends on a total performance score that combines scores on individual indicators across the different domains. The system includes incentives for both achievement and improvement, ensuring that all hospitals, even those with low performance, have some motivation to improve.^{130, 131}

ACHIEVEMENT AND IMPROVEMENT POINTS

For each indicator, the hospital can receive achievement or improvement points.^{104, 132-135} To calculate achievement points, the hospital's score is compared to a national achievement threshold (lower threshold – corresponding to the median performance score for participating hospitals nationwide) and to a national benchmark level (upper threshold – corresponding to the average performance score for participating hospitals in the top decile nationwide). No predefined target is set.

A maximum of 10 achievement points can be obtained for each indicator. If the hospital's score is below the national achievement threshold, the hospital gets no achievement points for the concerned indicator. If its score is above or at the national benchmark, the hospital gets 10 points for the concerned indicator. If its score lies between the lower and the upper threshold, the number of achievement points (rounded to the nearest whole number, between 1 and 9) is calculated as follows:

$$\left[9 \times \left(\frac{\text{Hospital Performance Score} - \text{National Achievement Threshold}}{\text{National Benchmark Score} - \text{National Achievement Threshold}} \right) \right] + 0.5$$

A similar process is used to calculate improvement points. In that case, the hospital's score is compared to its own score during a prior (baseline) period (lower threshold) and to the national benchmark level (upper threshold). A maximum of 9 improvement points can be obtained for each indicator. If the hospital's score is at or below its baseline level, the hospital gets no improvement points for the concerned indicator. If its score is above its baseline level, the number of improvement points (between 1 and 9) is calculated as follows:

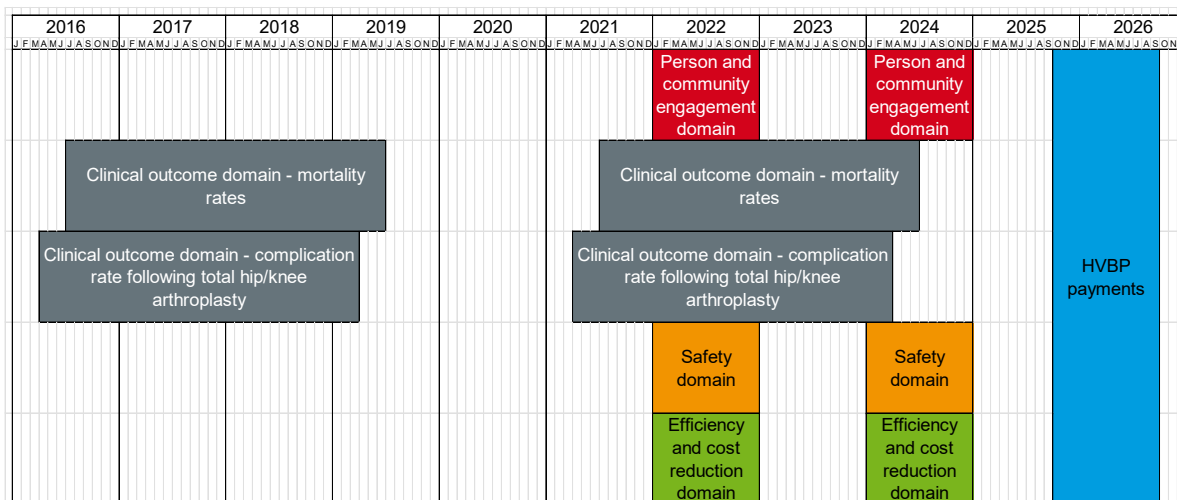
$$\left[10 \times \left(\frac{\text{Hospital Performance Score} - \text{Hospital Baseline Score}}{\text{National Benchmark Score} - \text{Hospital Baseline Score}} \right) \right] - 0.5$$

For each indicator, the hospital receives the higher point value of achievement or improvement.

TIME LAG

Different evaluation periods are used for calculating achievement and improvement points, and these periods also differ by domain.^{104, 132-135} Figure 2 shows the evaluation periods used for payments during the fiscal year 2025-2026. For most indicators, the performance period corresponds to the calendar year 2024, but clinical outcomes are evaluated on a three-year period (2021-2024). Baseline periods take place two years prior the performance period. For most indicators, it corresponds to the calendar year 2022, but for clinical outcomes it corresponds to the three-year period 2016-2019.

Figure 2 – Baseline and performance periods for the 2025-2026 HVBP programme



Source: U.S. Department of Health and Human Services (2024)¹²⁸

INDICATOR ELIGIBILITY

Minimal criteria are set for each indicator to be taken into account in the programme. In 2025-2026, the following rules apply:¹⁰⁴

- Clinical outcome domain indicators: at least 25 eligible cases
- Person and community engagement domain indicators: no minimum criteria
- Surgical site infection indicator (safety domain): at least one predicted infection for at least one out of two component measures
- Other healthcare-acquired infection indicators (safety domain): at least one predicted infection
- Efficiency and cost reduction domain indicators: at least 25 eligible cases.



DOMAIN SCORE

For each domain (except the person and community engagement domain), a score is calculated, as the ratio of the hospital's points to the maximum number of points that could be gained for that domain:^{104, 132-134}

$$\text{Domain Score} = \frac{\text{Sum of points earned on each scored indicator}}{\text{Maximum possible points on each scored indicator}}$$

The hospital's points are those achievement or improvement points gained for all the eligible indicators of the domain. The maximum number of points is 10 times the number of eligible indicators contained in the domain.

For the person and community engagement domain, a base score ranging from 0 to 80 points is calculated as the sum of achievement or improvement points for each of the eight indicators in the domain. In addition, a consistency score ranging from 0 to 20 points is calculated.^{104, 133, 134, 136} If the hospital's score for any indicator in the domain is lower or equal to a national floor (defined as the lowest score nationwide), the hospital gets no consistency points. If the hospital's score for all eight indicators is larger or equal to the national achievement threshold, the hospital gets 20 consistency points. Otherwise, the following formula is applied to each of the eight indicators:

$$\frac{\text{Hospital's performance period score} - \text{Floor}}{\text{Achievement threshold} - \text{Floor}}$$

The hospital is awarded a number of consistency points based on its lowest score as follows: (20 x lowest dimension score) – 0.5. The domain score (ranging from 0 to 100 points) is the sum of the base score and the consistency score.

DOMAIN ELIGIBILITY

As for indicators, minimal criteria are set for each domain to be taken into account in the programme. In 2025-2026, the following criteria apply:¹⁰⁴

- Clinical outcome domain: at least two out of six indicators
- Person and community engagement domain: at least 100 completed HCAHPS surveys
- Safety domain: at least two out of six indicators
- Efficiency and cost reduction domain: at least one (out of one) indicator.

A hospital must have at least three eligible domains out of four to be eligible for the HVBP programme.

TOTAL PERFORMANCE SCORE

The total performance score of a hospital is calculated as the weighted sum of all domain scores. As stated above, since 2018, all four domains have an equal weight (25%). Nevertheless, due to domain eligibility rules, a hospital might receive domain scores in three rather than four domains. In that case, the domain weights are proportionately re-weighted to the scored domains (33.3% each). The total performance score is scored on a 100-point scale.¹¹³

HEALTH EQUITY ADJUSTMENT

The HVBP programme has been criticised for disproportionately penalising hospitals serving disadvantaged and marginalised populations (e.g. low income or black patients, see also section 2.1.3.4).¹³⁷⁻¹⁴² Because scores are adjusted for medical but not for social risk factors, it has been argued that the programme worsens disparities by shifting resources away from these hospitals. In response to that, CMS decided in 2023 to include a health equity adjustment (HEA) in the calculation of the total performance score. The adjustment was foreseen to begin in 2025-2026. However, when finalising the rules for 2025-2026, CMS decided to remove the HEA from the HVBP programme.¹⁴³

The HEA consisted in a maximum of 10 additional points that could be gained by hospitals, on top of their total performance score. Two components were calculated:¹⁴²

- The 'underserved multiplier' was calculated by ranking hospitals according to the proportion of inpatients stays that are eligible for both Medicare and Medicaid^a (during the calendar year two years before), with higher ranks reflecting a higher share. The following formula (where DES stands for dual-eligible status) was used to generate values between 0 and 1.

$$\text{Underserved multiplier} = \frac{1}{1 + e^{-\left(-5 + 10 \times \frac{\text{DES Rank}}{\text{Max DES Rank}}\right)}}$$

- The 'measure performance scaler' was based on a score (0, 2, or 4 points) allocated to hospitals for being in the bottom third, middle third, or top third of each HVBP domain. All scores were summed up to generate values between 0 and 16.

The number of HEA additional points was obtained by multiplying the two components, with a cap at 10 points.

INCENTIVE STRUCTURE

The HVBP programme uses both bonuses and penalties to incentivise performance. It was suggested that such a structure would be more effective in improving outcomes, given hospitals' concerns about loss avoidance.^{61, 130}

The programme is designed to be budget-neutral, meaning that penalties imposed on some hospitals fund rewards for others.¹⁴⁴ To create the incentive pool, hospitals have a percentage of Medicare operating DRG payment withheld. This percentage was gradually increased in the initial years to reach 2% (by 0.25 percentage points each year, from 1% in 2012-2013 to reach 2% in 2016-2017 and subsequent years).¹¹³ Based on annual performance, a hospital may receive less than, more than, or exactly the amount that was withheld.¹⁴⁵

Each hospital's total performance score is converted into a specific payment adjustment percentage using a linear exchange function.¹¹⁶ This ensures that the total HVBP payments across all hospitals equal the amount contributed to the programme.¹³² The slope is calculated as follows:

$$\text{Slope} = \frac{\sum C_i}{\sum \left(C_i \times \frac{TPS_i}{100} \right)}$$

Where C_i is the amount contributed by hospital i (i.e. 2% of the operating revenues) and TPS_i is its total performance score. Sums are made across all eligible hospitals. For the 2025-2026 payments, the slope of the linear exchange function was 4.4748606420.¹⁴⁶

For each hospital, an adjustment factor is calculated:¹¹⁶

$$\text{Adjustment factor}_i = 1 + \left[\left(2\% \times \text{Slope} \times \frac{TPS_i}{100} \right) - 2\% \right]$$

The base operating DRG payment amount for each discharge is then multiplied by this adjustment factor. For instance, the adjustment factor for a hospital with a total performance score of 50 is 1.0247 ($= 1 + [(0.02 \times 4.47 \times 0.5) - 0.02]$), corresponding to a 2.47% bonus on DRG payments. In 2025-2026, the adjustment factors ranged from 0.98 (a 2% penalty, corresponding to the amount withheld) to 1.0477 (a 4.47% bonus) (mean = 1.0013, median = 0.9997). Note that the maximum penalty is capped (at 2%, corresponding to the amount withheld) while the maximum bonus is not. About a third (31%) of

^a Medicaid is a U.S. government programme (administered by states, according to federal requirements) that provides health insurance for adults and children with limited income and resources.



hospitals earned a bonus of 0.5% or more, while 27% had a penalty of 0.5% or more (own calculation, based on CMS (2024)¹⁴⁶). These percentages are higher than in the initial years of the programme.¹³⁸

2.1.3.3 *Hospital participation*

The HVBP programme is mandatory for acute care hospitals paid under the IPPS. Some acute hospitals are excluded from the IPPS, in particular cancer hospitals, children's hospitals, extended neoplastic disease care hospitals and hospitals located outside the 50 states, the District of Columbia, and Puerto Rico.¹⁴⁵ Inpatient psychiatric facility hospitals, inpatient rehabilitation facility hospitals and long-term care hospitals are also not included in the IPPS.¹⁴⁵

In addition, hospitals in Maryland are exempt from the HVBP programme due to their all-payer waiver. These hospitals are subject to another P4P programme, called Quality Based Reimbursement (QBR). The incentive structure is similar between HVBP and QBR, but different targets, indicator weights and score calculations are used.¹⁴⁷

Finally, hospitals that fail to meet minimum data or case-volume are also excluded (see domain eligibility in section 2.1.3.2: a hospital must have at least three eligible domains out of four to be eligible for the HVBP programme).

From CMS' final rules datafiles, it can be estimated that around 80% of IPPS hospitals were included in the HVBP programme in 2024-2025.¹⁴⁸

2.1.3.4 *Evaluation strategy*

MANDATORY AUDIT

The Affordable Care Act (ACA) establishing the HVBP programme included a provision stating that the impact of the programme should be assessed by the Government Accountability Office not later than 1 July 2017, with an interim report not later than 1 October 2015. The assessment should concern the impact on (1) quality of care, (2) expenditure, (3) quality performance among safety net hospitals^b and (4) quality performance among small rural and small urban hospitals.

The interim report showed no apparent change in quality of care trends but stated that such shift could occur in the future.¹³⁷ It reported only modest effects on Medicare payments. Indeed, in the initial years of the programme, HVBP represented less than 0.5% of applicable Medicare payments each year. However, it concluded that safety net hospitals had lower median payment adjustments (corresponding to smaller bonuses or larger penalties) than hospitals overall, although the gap narrowed over time during the three first years of the programme. On the contrary, small urban hospitals had higher median payment adjustments than hospitals overall. No difference was found for small rural hospitals.

The final report states that the majority of hospitals received a bonus or a penalty of less than 0.5% each year, although over time, an increasing share of hospitals received bonuses of more than 0.5%.¹³⁸ In safety net hospitals, median scores for the domains clinical processes, patient experience, patient outcomes and safety were consistently lower compared to all participating hospitals. Regarding hospital size, scores were generally higher in small urban and rural hospitals, compared to all participating hospitals.

^b Safety net hospitals have the legal obligation to provide healthcare for individuals regardless of their insurance status or ability to pay. They typically serve a higher share of uninsured, low-income, and other vulnerable individuals than other hospitals.

UNINTENDED CONSEQUENCE OF INCLUDING THE EFFICIENCY DOMAIN

The Government Accountability Office's final report also identified unintended consequences of the introduction of the efficiency domain in 2014-2015: some hospitals with high efficiency scores received bonuses, although they had relatively low quality (clinical processes, patient experience, patient outcomes and safety) scores.¹³⁸ In addition, the efficiency domain score had a larger impact on the total performance score for hospitals with missing domains, because missing scores are compensated by increasing the weights associated with other scores. To mitigate this issue, the Government Accountability Office recommended to revise the formula used to calculate total performance scores and to revise the method of proportional reweighting used to correct for missing domain scores.

Since the report, no change has been made to the weight associated with the efficiency domain (25% since 2015-2016) but the minimum number of domains required for a hospital to be eligible has been revised. Before 2016-2017, participating hospitals were required to have scores in at least two domains. This minimum has been set at three since 2016-2017 (see section 2.1.3.2).

IMPACT ON QUALITY

In several scientific articles, no impact of the HVBP programme on quality of care was found. In particular, Figueroa et al. (2016) and Banerjee et al. (2019) found no effect of the programme on mortality for patients admitted for acute myocardial infarction, heart failure or pneumonia.^{61, 65} Ryan et al. (2017) found similar results for acute myocardial infarction and for heart failure patients but in their difference-in-difference analysis the HVBP programme was associated with a significant reduction in mortality among pneumonia patients.⁶⁶

In addition, Ryan et al. (2015, 2017) found no evidence of improvements in clinical process measures of quality or patient experience in hospitals exposed to HVBP compared to control hospitals.^{66, 149}

Although average quality gains are often close to zero in hospitals participating in the HVBP programme, substantial quality gains can be observed in some hospitals, because hospitals face different financial incentives to improve quality.^{150, 151}

INEQUITY

The HVBP programme has been criticised to disproportionately penalise hospitals that serve larger proportions of disadvantaged populations.¹³⁷⁻¹⁴² In an attempt to correct this effect, CMS decided to implement a health equity adjustment (HEA) in the calculation of the total performance score (see section 2.1.3.2). It was expected that this adjustment would significantly reclassify hospital performance and redistribute programme payments.¹⁴² This policy was expected to benefit safety net hospitals as well as those with a high proportion of black patients.¹⁴² However, due to recent national policy changes, the HEA has been removed from the HVBP programme.

DESIGN ISSUES

Several authors have suggested that HVBP incentives are not large enough to motivate hospitals to make considerable investments in improving care.^{65, 152-155} In addition, significant volatility have been observed in the adjustment factor from one year to the other, complicating financial planning and process management.¹⁵⁶ Because the programme is budget-neutral, with all adjustments centred around zero, hospitals must achieve significantly better results to differentiate themselves.

It has also been shown that there is a large gap between top-performers and other hospitals.¹⁴⁴ In addition, the highest-performing hospitals tend to keep high scores from year to year, which may prevent lower-ranked hospitals from increasing in position.^{144, 157} Although improvement points can be earned, it seems that hospitals that begin below the average may not be able to close the gap with those starting above it, while top-performers can maintain a persistent advantage.¹⁵⁷ Consequently, lower-performing hospitals are likely to face penalties even though they improve their performance.



Regarding the selected indicators, some authors advocate for a reduction of the number of indicators, focusing on measures that are relevant for patients and that can be risk-adjusted.¹⁵² Similarly, it was argued that increasing the weight associated with mortality indicators would reduce the safety-net hospitals' disadvantage.¹⁴¹ Indeed, these hospitals present performance on mortality indicators that is comparable to other hospitals, however they tend to have poorer performance on process and patient experience indicators.

It should also be noted that current weights do not reflect the preferences of Medicare beneficiaries. In the programme, performance on each domain is equally important, while beneficiaries value more performance on clinical outcomes.¹⁵⁸

2.1.3.5 *Integration with hospital strategy*

PAY-FOR-PERFORMANCE PROGRAMMES

In addition to the HVBP programme, two P4P programmes for hospitals were introduced by the Affordable Care Act (ACA) in 2010: the Hospital Readmission Reduction (HRR) programme and the Hospital-Acquired Conditions Reduction (HACR) programme (see section 2.1.2).

Within the HRR programme, hospitals are penalised in case of high 30-day standardised unplanned readmission rate for acute myocardial infarction, COPD, heart failure, pneumonia, coronary artery bypass graft surgery and elective primary total hip and/or knee arthroplasty.¹⁵⁹ Hospitals payments are reduced by a percentage that depends on the hospital's weighted average performance across the readmission indicators.

The HACR programme reduces by 1% the payments to hospitals in the worst-performing quartile for preventable hospital-acquired conditions.¹⁶⁰ This penalty is applied to hospitals' payments after other adjustments are made due to the HVBP programme or the HRR programme.¹⁶¹

The ACA also introduced a P4P programme targeting physician payments: the Physician Value-Based Modifier (PVBM) programme.¹⁶² In 2014, the Protecting Access to Medicare Act (PAMA) introduced a programme similar to the HVBP programme, targeting facilities that provide short-term intensive medical care and rehabilitation after hospitalisation: the Skilled Nursing Facility Value-Based Purchasing (SNF VBP) programme. Since 2016, a value-based purchasing programme also exists for home health agencies: the Home Health Value-Based Purchasing (HHVBP) programme.¹⁶³

PAY-FOR-REPORTING PROGRAMME

Created in 2003, the Hospital Inpatient Quality Reporting (IQR) programme is a pay-for-reporting programme for acute care hospitals.¹⁶⁴ Hospitals are penalised if they do not successfully report designated quality measures. The initial penalty corresponded to a 0.4 percentage point reduction in the annual market basket (the measure of inflation that is used to update DRG tariffs annually). This reduction was increased to 2 percentage points in 2005. Since 2015, the penalty corresponds to 25% of the annual payment rate update (the latter is projected to be 3.3% in 2025-2026).¹⁴³

Hospitals' results are also publicly available (see section 2.1.3.7). Data from selected indicators recorded in the IQR programme are used under the HVBP programme, the HACR programme and the HRR programme to reward hospitals for the quality of care they provide.

ALTERNATIVE PAYMENT MODELS

In 2015, the Secretary of Health and Human Services announced an important shift in Medicare payments towards more value-based care.¹⁶⁵ The announced objective was to have 85% of Medicare payments tied to quality or value by 2016, and 90% by 2018 (see Table 3). An additional objective was to have 30% of Medicare payments tied to quality or value through alternative payment models by the end of 2016, and 50% by the end of 2018. Alternative payment models include accountable

care organisations, bundled payments, etc. In these models, some payments are tied to the effective management of a population or an episode of care.¹⁶⁶

Before that, more than 50% of Medicare payments were already tied to quality, but almost none through alternative payment models (data 2011).¹⁶⁶ By March 2016, the first targets were already met (85% of Medicare payments tied to quality and 30% through alternative payment models).¹⁶⁶

Table 3 – Payment taxonomy framework and value-based payment targets for Medicare in 2016 and 2018

Payment type	Description	Target 2016		Target 2018	
Category 1	Payments based on volume of services and not linked to quality or efficiency				
Category 2	At least a portion of payments vary based on the quality or efficiency of healthcare delivery				
Category 3	Some payment is linked to the effective management of a population or an episode of care. Payments still triggered by the delivery of services, but opportunities for shared savings or 2-sided risk	30%	85%	50%	90%
Category 4	Payment is not directly triggered by service delivery so volume is not linked to payment. Clinicians and organisations are paid and responsible for the care of a beneficiary for a long period (e.g. ≥ 1 year)				

Sources: CMS (2015)¹⁶⁷ and McClellan et al. (2017)¹⁶⁶

2.1.3.6 Stakeholder involvement

As part of the IPPS annual rulemaking cycle, CMS publishes ‘proposed rules’ that include indicators, national thresholds and evaluation periods. Users, providers, researchers, and other stakeholders are invited to submit comments on these rules. By law, anyone can submit comments.¹⁶⁸ CMS take these comments into consideration when designing final policies. Public comments, as well as CMS’ responses, are published along with final decisions in the ‘final rules’.

But before that, stakeholders play a key role in indicator development, endorsement, and ongoing evaluation, through a ‘consensus-based entity’.¹⁶⁹ Since 2009, the National Quality Forum (NQF) is the consensus-based entity for HVBP and other Medicare value-based programmes.¹⁷⁰ This non-profit organisation aims to obtain multistakeholder consensus on quality measurement and improvement standards.¹⁷¹ In particular, consensus is searched on the selection of quality indicators under consideration for use in the HVBP programme. CMS is not required to select only NQF-endorsed indicators, but these measures are generally considered as of high-quality.¹⁷² The endorsement status for each indicator is also published in CMS’ proposed and final rules.

2.1.3.7 Methods used for transparency and accountability

PUBLICLY AVAILABLE DATA

Inpatient hospitals’ quality data are collected through the Hospital Inpatient Quality Reporting (IQR) programme. The IQR is a pay-for-reporting programme (see section 2.1.3.5), so that hospitals are penalised if they do not report their quality data.¹⁶⁴ Since 2005, data collected through the IQR are publicly available through the Hospital Compare website (www.hospitalcompare.hhs.gov).¹⁰¹ This website was initiated by Medicare and the Hospital Quality Alliance, a public-private collaboration created to promote reporting on hospital quality of care.¹⁷³



Initially, data were available for ten indicators (five related to patients with acute myocardial infarction, two to heart failure patients and three to pneumonia patients).¹⁷⁴ Data from the HCAHPS survey were added in 2008, along with data on hospital 30-day mortality rate for heart attack, heart failure, and pneumonia. Readmission indicators for the same patients were added in 2010. Since their implementation, data for all indicators included in the HRR and in the HVBP programmes are available on the website. Patient reported outcome were added in 2024.

Indicator results from the HVBP programme are updated each year in January on the Hospital Compare website.¹⁷⁵ The incentive payment adjustment factors (linked to the hospital official number) are also made publicly available on the CMS website.¹⁷⁵

FEEDBACK TO HOSPITALS

Hospitals participating in the HVBP programme receive two individual reports each year, through a secure portal.¹⁷⁵ The 'baseline report' gives providers access to their baseline period results and outlines the performance standards for indicators included in the programme. The 'performance report' provides a comprehensive view of baseline and performance period results, performance standards, indicators scores, domain scores, total performance score and the payment adjustment factor for the fiscal year.

In addition, CMS provides hospitals with a specific report on mortality and complications (clinical outcome domain) and a specific report on the Medicare Spending Per Beneficiary indicator (efficiency and cost reduction domain). These reports, available through the same secure portal, allow hospitals to review and request corrections to performance calculations during a 30-day window before the results are used to calculate the total performance score.

2.2 Incitation Financière à l'Amélioration de la Qualité (IFAQ) programme in France

2.2.1 Brief overview of the financing methods for acute hospitals

ACTIVITY-BASED PAYMENTS (ABP) AND OTHER FINANCING SOURCES

For the description of the financing of acute hospitals in France, we focus on acute hospitals providing medical, surgical, and obstetrical care (*'Etablissements de Médecine-Chirurgie-Obstétrique'* – MCO). In this section, acute care therefore refers to care provided by MCO.

ABP for MCO was introduced in France in 2004-2005, with a progressive implementation (reaching 100% of MCO activities in 2005 for private for-profit hospitals and in 2008 for public hospitals and private non-profit hospitals). All acute care facilities (public, private non-profit, and private for-profit) are paid through this diagnosis-related group (DRG) system. Within this system, patients are classified into clinically relevant and economically homogeneous categories, called *'Groupes Homogènes de Malades'* – GHM. The GHM classification system was developed based on the French hospital discharge database (*'Programme de Médicalisation des Systèmes d'Information'* – PMSI) and the technical agency for information on hospital care (*'Agence Technique de l'Information sur l'Hospitalisation'* – ATIH) is in charge of monitoring and modifying this GHM classification system.

DRG tariffs (*'Groupes Homogènes de Séjours'* – GHS), i.e. the payment associated with a GHM, are set nationally based on annual National Cost Study data, collected from a voluntary sample of hospitals (representing 16% of admissions in 2023). Separate tariffs are determined for public/non-profit hospitals and private for-profit hospitals. Tariffs cover operating costs, investments, and, in public and private non-profit hospitals, physician fees. Physician fees are not included in private non-profit hospitals because in these hospitals, they are self-employed.

When an increase in hospital volumes leads to the national budget being exceeded, DRG tariffs are reduced for all hospitals in the following year in order to remain within the national budget limits. This practice has been regularly applied since 2008.¹⁷⁶

In addition to the ABP, acute hospitals also receive:

- Lump sum payments to cover the cost of education, research and other missions of public interest;
- Retrospective payments for expensive innovative drugs and devices;
- Emergency grants;
- P4P financing, introduced in 2012 (see below).

More details about these additional revenue sources can be found in KCE report 392 on DRG-based hospital payment systems.¹⁷⁶

From 2018 onwards, it was decided to partially move away from APB and to introduce bundled payments and global budgets for part of the hospital financing:^{176, 177}

- In 2019, bundled payments were introduced in a sample of voluntary hospitals for three conditions: total hip replacement, total knee replacement and cancer-related colectomy (episode-based payments).
- Also in 2019, the possibility of requesting for a bundled payment in the form of a capitation was introduced in acute hospitals for patients with chronic renal disease (stages 4 and 5), covering in- and out-patient visits and services delivered at the hospital over a year (annual monetary amount per patient, not mandatory).
- In 2021, the funding for emergency departments (EDs) was changed to a mix of:



- A capitation system implemented at the regional level based on the characteristics of the population and of the region and funnelled to each hospital by the regional health agency ('*Agence régionale de santé*' – ARS) (53%);
- An ABP based on a fee scale which varies with age, criticality, whether patients were brought in by ambulance, whether a specialist was consulted, and whether biological tests and radiology exams were necessary (45%);
- A P4P scheme that includes quality of care aspects, as well as organisational aspects (2%) (not described in this report);
- Moreover, in January 2022, a co-payment of € 19.61 was introduced if the ED visit does not lead to a hospitalisation; the co-payment was increased to € 23 from March 2026.¹⁷⁸

More recently, the Social Security Financing Act for 2024 (LFSS 2024) includes a reform of the financing of acute hospitals, which was implemented by the Decree of 31 December 2024. This reform introduces a three-part funding structure for acute hospitals: ABP for inpatient standardised hospital activities, global budgets negotiated at the regional level for activities related to public health objectives (prevention, quality, coordination), and a mix of APB and global budgets for specific activities (teaching, research, innovation, referral and expertise services on the one hand and emergency departments, intensive care, care in isolated areas and chronic disease management on the other hand).¹⁷⁹

P4P

The main P4P programme in acute hospitals (known as '*Incitation Financière à l'Amélioration de la Qualité*' – IFAQ) started in 2012 on a voluntary basis (experimental phase).

In 2016, the programme was generalised, on a mandatory basis, to all acute hospitals involved in MCO activities, also including hospital at home ('*hospitalisations à domicile*' – HAD) and dialysis.

The programme was extended in 2017 to facilities for post-acute and rehabilitation services and in 2022 to psychiatric hospitals.

The programme is implemented by the Ministry of Health ('*Direction générale de l'offre de soins*' – DGOS). The first preparatory work was led by the DGOS and the French National Authority for Health ('*Haute Autorité de Santé*' – HAS) with the support of several other French agencies (hospital federations, ATIH, '*Agence Nationale d'Appui à la Performance*' – ANAP, '*Direction de la Recherche, des Etudes, de l'Evaluation et des Statistiques*' – DREES and '*Caisse Nationale d'Assurance Maladie*' – CNAMTS).¹⁸⁰

In addition to IFAQ, quality-based payments exist for emergency services and community hospitals; however, these programmes are not described in this chapter.

The IFAQ programme was reviewed several times, with a significant modification in 2019. Substantial changes to the IFAQ and other quality-based programmes are also planned for 2026-2027.

2.2.2 Objectives and rationale of the programme

The official objective of IFAQ, as stated in the technical notes explaining the programme, is to recognise and incentivise the implementation of quality-improvement initiatives in healthcare facilities.¹⁸¹

At the beginning of the process, the two main reasons cited to justify the IFAQ system were:¹⁸²

- An insufficient emphasis on quality in hospital funding: the ABP scheme was not designed to promote healthcare quality and may even present risks to the quality of care, as it incentivises hospitals to reduce costs per stay regardless of patient outcomes. This created a need for a remuneration system that explicitly incorporates quality-based incentives.

- A desire to make existing performance data on quality visible and actionable: previous years were marked by the development and validation of quality indicators, which made possible the implementation of P4P programmes in French hospitals.

2.2.3 *Scope of the analysis*

The elements presented in the following sections focus on the IFAQ system as implemented since 2019, with particular emphasis on the 2025 programme. Earlier versions of the system are briefly described in the final section, 'Evolutions'. Section 2.1.3.4 also outlines the changes planned for the 2026 programme following its evaluation.

In addition, the following sections concentrate on MCO indicators (for acute hospitals). Indicators specific to HAD, dialysis, post-acute and rehabilitation facilities, and psychiatric hospitals are out of scope.

2.2.4 *Design*

2.2.4.1 *Indicator design*

DOMAINS, SCOPE, TYPE AND QUALITY DIMENSIONS COVERED BY THE INDICATORS

The list of MCO-specific indicators included in the IFAQ system since 2019 is presented in Table 4.

In IFAQ 2025, MCO indicators consist of outcome indicators (n = 6), process indicators (n = 4), and structure indicators (n = 1).

Among the outcome indicators, two measure patient satisfaction (Patient-Reported Experience Measures, PREMs), and four (but accounting for one indicator in the calculation, see the section on weighting) measure complications (thromboembolic events and infections) following hip or knee replacement. These 'orthopaedic indicators' were not included in IFAQ 2019 and 2023.

Indicators are classified in five domains:

- Patient-perceived quality of care, including indicators related to:
 - People-centredness, i.e. PREMs measured both on an hospital-wide level and specific to outpatient surgery;
- Quality of clinical care, including indicators related to:
 - Appropriateness of care, usually at the hospital-wide level (e.g. adherence to guidelines on pain assessment and management); and
 - Safety of care, for a specific episode of care (thromboembolic events after total hip and knee replacement);
- Quality of practices in the prevention of healthcare-associated infections, including indicators related to:
 - Appropriateness of care, usually at the hospital-wide level (e.g. appropriateness of additional contact precautions for patients with healthcare associated infection); and
 - Safety of care, for a specific episode of care (surgical site infections after total hip and knee replacement);
- Quality of care coordination, including indicators related to:
 - Continuity of care, either at the hospital-wide level or specific to outpatient surgery (e.g. the quality of the discharge letter) or on the development of eHealth services, at the hospital-wide level (e.g. the use of a secure messaging service integrated into the Health Secure Messaging trust space);



- Accreditation process (*'Démarche de certification'*). This structural indicator, measured at the hospital-wide level, focuses on the process of applying for accreditation and on the result of that process.

These indicators can also be grouped into three categories, depending on the project to which they relate: quality and patient safety indicators (*'indicateurs de qualité et de sécurité des soins'* – IQSS), eHealth indicators from the HOPE'N programme, and the indicator linked to the accreditation process (see also Table 4).

INDICATOR SELECTION APPROACH

Quality and patient safety indicators (IQSS) have been developed in France since several years and have been under the sole responsibility of the HAS since 2015. The majority of indicators included in the IFAQ programme are IQSS indicators (73% in 2025, see Table 4). Indicator selection is based on a multi-step process, including a review of the literature and of existing recommendations, as well as a consensus-based validation through a dedicated expert working group (see also section 2.2.4.6).¹⁸³

For each IQSS indicator, a technical sheet is provided with a.o. information on the rationale for inclusion and technical considerations.¹⁸⁴ However, not all IQSS indicators are included in the IFAQ system. Inclusion in the IFAQ system is jointly decided by the HAS and the DGOS but the rationale behind the inclusion or exclusion was not found.

HAS is also responsible for the validation of the accreditation process.

The remaining indicators, i.e. two indicators on eHealth services in 2024-2025, were developed by the DGOS, within the HOP'EN programme (*'Hôpital numérique ouvert sur son environnement'*), a national programme to accelerate hospital digital transformation.

It should be noted that the ATIH also develops some IFAQ indicators but these relate to psychiatric hospitals and are out of scope.

WEIGHTING SYSTEM

In IFAQ 2019-2025, all indicators have the same weight (1), except the four indicators related to infection and thromboembolic events after knee and hip replacement, accounting for one indicator (weight of 0.25) and the indicators related to eHealth services, also accounting for one indicator but with the weights varying across the years (1/3 in 2021, 0.25-0.75 in 2022, 0.5-0.5 in 2023-2024-2025) (see also Table 4).

NUMBER OF INDICATORS

A maximum of 13 indicators were measured in 2022 (9 when weighted). This number was reduced to 7 in 2023 (6 weighted) and 11 in 2024–2025 (7 weighted). Since 2023, IQSS indicators have been calculated on a biennial basis, with the exception of patient-reported experience indicators and the accreditation indicator, which remain annual. In 2025, the same system as in IFAQ 2024 was reused without modification, as a new system is currently under development. Moreover, during the COVID-19 pandemic (2020), the system was put on hold.

Data sources

Most quality indicators are either based on patient surveys (e.g. indicators on satisfaction), hospital surveys (e.g. consumption of alcohol-based hand rub solution), data from the hospital discharge database (PMSI), or data from the patient record (see Table 4). When the indicator is based on data extracted from patients' records, only a random sample of stays (between 50 and 70 per hospital) is analysed, and the lower confidence limit is used.

Indicators on eHealth services are issued from the HOP'EN programme. Finally, regarding the accreditation process, the most recent accreditation level validated by the HAS is used.

Table 4 – Indicators taken into account in IFAQ since 2019

Indicator	2019	2020	2021	2022	2023	2024	2025	Type	Weight	Adjustment	Data source
Patient-perceived quality of care											
Patient experience and satisfaction – >48h in MCO	x		x	x	x	x	x	Outcome	1	Adjusted for overall life satisfaction and perceived improvement in health following the hospital stay.	Patient survey, IQSS – e-Satis
Patient experience and satisfaction after outpatient surgery	x		x	x	x	x	x	Outcome	1		Patient survey, IQSS – e-Satis
Quality of clinical care											
Assessment and management of pain	x			x	x			Process	1	No	Patient record, IQSS
Thromboembolic events after total hip replacement			x*	x		x	x	Outcome	0.25	Age, gender, 10 co-morbidities, time between surgery and discharge	PMSI, IQSS
Thromboembolic events after total knee replacement				x		x	x	Outcome	0.25		PMSI, IQSS
Rate of stays with electronic prescribing of medications	x							Process	1	No	
Quality of practices in the prevention of healthcare-associated infections											
Appropriateness of additional contact precautions for patients with healthcare associated infection (e.g. MRSA)				x		x	x	Process	1	No	Patient record, IQSS
Surgical site infections after total hip replacement			x*	x		x	x	Outcome	0.25	Age, gender, 10 co-morbidities, time between surgery and discharge	PMSI, IQSS
Surgical site infections after total knee replacement				x		x	x	Outcome	0.25		PMSI, IQSS
Consumption of alcohol-based hand rub solution	x							Process	1	No	Hospital survey, IQSS
Quality of care coordination											
Quality of the discharge summary letter	x			x	x			Process	1	No	Patient record, IQSS
Quality of the discharge summary letter after outpatient surgery	x			x		x	x	Process	1	No	Patient record, IQSS
Updating the Patient Medical Record for patients who have one upon admission				x	x	x	x	Process	0.5 (0.25 in 2022)	No	HOP'EN

Indicator	2019	2020	2021	2022	2023	2024	2025	Type	Weight	Adjustment	Data source
<i>Use of a secure messaging service integrated into the Health Secure Messaging trust space</i>				X	X	X	X	Process	0.5 (0.75 in 2022)	No	HOP'EN
<i>Rate of structured imaging reports, produced during an emergency department visit or during the patient's hospital stay, and accessible electronically directly from the relevant clinical and medico-technical departments</i>			X					Process	1/3	No	HOP'EN
<i>Rate of departments for which the electronic patient medical record includes consultation reports, hospitalisation reports, operative reports, imaging reports, discharge medications, laboratory results, and the discharge summary letter</i>			X					Process	1/3	No	HOP'EN
<i>Rate of inpatient stays with a single, unified electronic care plan fed by all prescriptions.</i>			X					Process	1/3		HOP'EN
Accreditation process											
Accreditation level	X		X	X	X	X	X	Structure		No	HAS
Total	8		8	13	7	11	11				
Total (with weights)	8		5	9	6	7	7				

* = grouped in one indicator in 2021. IQSS = indicateurs de qualité et de sécurité des soins ; HOP'EN = Hôpital numérique ouvert sur son environnement ; MRSA = Meticilline-résistante *Staphylococcus aureus*; PMSI = Programme de Médicalisation des Systèmes d'Information ; HAS = Haute autorité de santé ; Sources: HAS, HTAI and Legifrance^{181, 184-187}

ADJUSTMENT

Adjustment is made for outcome indicators.

For indicators related to hip and knee replacements (orthopaedic indicators), the following variables are taken into account: age, gender, a list of 10 co-morbidities, and the time between surgery and discharge.

For indicators related to patient experience and satisfaction, the raw score is adjusted for two patient-reported covariates: overall life satisfaction and perceived improvement in health following the hospital stay.

EVOLUTION

The initial IFAQ model (IFAQ 1) was voluntary and was constructed using the national quality and patient safety indicators (IQSS^c, 7 process indicators selected), the accreditation level (1 indicator), and the level of digitalisation of hospital information systems (use of electronic patient records). A working group decided on weights for each quality component, and a composite IFAQ score was obtained as the weighted sum across the nine components. Hospitals with a composite score ranked in the top 30% received a financial incentive of 0.3% to 0.5% of their total budget, with an upper limit of € 500 000. A total of 222 healthcare facilities participated in this first experimental phase and in December 2014, 93 healthcare facilities received financial incentives, for a total amount of € 12.4 million.^{180, 182}

A second experimental phase (IFAQ 2) took place in 2014, still on a voluntary basis, with a new call for applications targeting 500 healthcare facilities. IFAQ 2 allowed for the testing of additional parameters, notably specialty-specific IQSS indicators (including stroke, diabetes, myocardial infarction, and postpartum haemorrhage). In December 2015, 176 healthcare facilities were remunerated, for a total amount of € 34 million.^{180, 189}

Between 2016 and 2018, the programme was mandatory, relied exclusively on existing quality initiatives (IQSS) and did not involve any new data collection. Under this scheme, all acute hospitals reported a limited set of indicators, primarily process-based indicators related to patient safety (e.g. prevention and control of healthcare-associated infections). Nevertheless, the financial incentive remained limited (€ 50 million in 2018) and applied to a relatively small share of healthcare facilities (approximately 30% of facilities received payments in 2018).^{189, 190}

In 2019, the IFAQ programme underwent a major reform and became an integral component of hospital funding (see also section 2.2.4.2 on incentive structure). The budget dedicated to IFAQ progressively increased: € 200 million in 2019, € 450 million in 2021 and € 700 million in 2022-2025. This increase was also related to the increase in the scope (e.g. enlarged to psychiatric centres in 2022). If limited to MCO, dialysis and HAD, the budget increased from € 160 million in 2019 to € 450 million in 2022-2025. For IFAQ 2021, not all indicators could be measured so the budget was not fully based on the results of indicators. IFAQ was again fully applied from 2023 onwards.¹⁸⁶

Substantial changes to the IFAQ and other quality-based programmes are planned for 2026-2027, based on recommendations made by the General Inspectorate of Social Affairs (*'Inspection générale des affaires sociales'* – IGAS) in their 2024 report¹⁹¹ (see also section 2.1.3.4). Moreover, an envelope targeting 1 billion euros is planned and possibly a second envelope of 1 billion euros for some specific quality components (emergency care, chronic disease). However, full implementation has been

^c The IQSS system emerged in the mid-2000s, driven by both public demands for transparency and international trends in quality measurement. The first national set of quality indicators was published in 2005 and focused on hospital-acquired infections. A public reporting of these indicators is mandatory since 2010.¹⁸⁸



delayed, and for 2026 the envelope remains set at € 700 million, even though some changes can already be observed (see section 2.1.3.4).

In parallel, HAS is currently working on the development of new IQSS indicators related to obstetric care (measurement of postpartum haemorrhages and experience reported by patients in maternity wards), to the recovery from post-operative complications, and to experiences reported by patients in emergency departments and on hand hygiene. However, even if an increase in the number of IFAQ indicators is planned for 2027, it is not clear which of these indicators will be included as not all IQSS indicators are used in the IFAQ system.

2.2.4.2 Target definition and incentive structure

The description in this section focuses on IFAQ 2025, but a quite similar process was applied from 2019 to 2025, unless otherwise specified.

ACHIEVEMENT AND IMPROVEMENT POINTS

For IQSS indicators (except indicators on infections and thromboembolic events after total hip and knee replacement), the system includes incentives for both achievement and improvement, ensuring that all hospitals, even those with low performance, have a motivation to improve.

For each indicator, a Remuneration Score based on the Achievement is calculated ($RS_{\text{achievement}}$). For this, both a target and a threshold are defined:

- Targets are described in Table 5. These targets were defined by the HAS. For indicators related to patient experiences, the target was determined based on the results of the first survey and were maintained afterwards.
- Thresholds are determined so that 70% of facilities are remunerated (30th percentile).

The Remuneration Score based on the Achievement ($RS_{\text{achievement}}$) is determined as follows:

- $RS_{\text{achievement}} = 1$ (100%) if the target is reached;
- $RS_{\text{achievement}} = 0$ if the hospital is below the threshold;
- $RS_{\text{achievement}} = \text{the ratio between the value achieved and the target } \left(\frac{\text{Value}}{\text{Target}}\right)$ if the hospital is between the target and the threshold.

A Remuneration Score based on the Evolution ($RS_{\text{evolution}}$) is only calculated if the target is not reached. This score is calculated as follows:

- $RS_{\text{evolution}} = 1$ (100%) if the evolution is positive;
- $RS_{\text{evolution}} = 0.5$ if the evolution is stable (and the achievement level/score is not null);
- $RS_{\text{evolution}} = 0$ if the evolution is negative or the achievement level/score is null (below the threshold).

The total Remuneration Score for the Indicator ($RS_{\text{indicator}}$) is then calculated as follows:

- $RS_{\text{indicator}} = 1$ if the target is reached;
- $RS_{\text{indicator}} = 0.5 RS_{\text{achievement}} + 0.5 RS_{\text{evolution}}$ if the target is not reached (based on IFAQ 2025 but in 2019 for example, it was 0.6 for the achievement and 0.4 for the evolution).

Table 5 – Targets for 2025 IQSS indicators*

Indicator	Target
Patient experience and satisfaction – >48h in MCO	77.3/100
Patient experience and satisfaction after outpatient surgery	79.7/100
Appropriateness of additional contact precautions for patients with healthcare associated infection (e.g. MRSA)	80/100
Quality of the discharge summary letter after outpatient surgery	80/100

*Same targets were set in the previous IFAQ programme (2019-2024)^{181, 186}

For the remaining indicators, the evolution is not taken into account.

For indicators related to infections and thromboembolic events after hip and knee replacement, a specific calculation is made. For these indicators, a standardised ratio (observed events/expected events after risk adjustment)^d is calculated and the total remuneration score for the indicator ($RS_{Indicator}$) is 1 if the observed events correspond to the expected events (= below the +3 standard deviation (SD) and 0 otherwise (= above the +3 SD).

For the indicator related to the accreditation process, the total remuneration score for the indicator ($RS_{Indicator}$) is calculated as follows:

- $RS_{Indicator} = 1$ if the accreditation process is based on the 2014 version and a score of A (v2014 A) is obtained or if the accreditation process is based on the new procedure and the hospital is accredited with the mention 'high quality';
- $RS_{Indicator} = 0.80$ if the accreditation process is based on the new procedure and the hospital is accredited without the mention 'high quality';
- $RS_{Indicator} = 0.75$ if the accreditation process is based on the 2014 version and a score of B is obtained (v2014 B).

For eHealth indicators based on the HOP'EN programme, the total score for the indicator ($RS_{Indicator}$) is 100%.

A CLASSIFICATION ACCORDING TO THE VOLUME OF ACTIVITY

Hospitals are classified in groups according to their volume of activity and an IFAQ budget is allocated by group ('Budgetgroup') based on the economic activity (valued using the GHS tariffs and supplements^e set for the year N-1):

- Group 1: Facilities performing at least 500 stays (excluding day-only sessions) and for which 80% of activity is concentrated in fewer than 15 activity groups (as defined by the GHM Manual, i.e. activity groups are used to summarise and categorise the hospital's acute-care activity by grouping several related DRG roots ('*racines de GHM*') into larger, clinically coherent clusters (n=217 in version v11g; e.g. G001 = upper gastrointestinal surgery))¹⁹³;
- Group 2: Facilities performing at least 500 stays (excluding day-only sessions) and for which 80% of activity is concentrated in at least 15 but fewer than 35 activity groups;

^d The observed number corresponds to the number of events coded in the database. The expected number of events takes into account risk-related factors that are independent of the quality of care and identifiable in the PMSI. It is calculated using a regression model estimated on the entire reference population.

^e e.g. resuscitation or isolation supplement, see Annex 1 of the Decree of 15 April 2024.¹⁹²



- Group 3: Facilities performing at least 500 stays (excluding day-only sessions) and fewer than 20 000 stays per year, and for which 80% of activity is concentrated in at least 35 activity groups (as defined by the GHM Manual);
- Group 4: Facilities performing at least 20 000 stays (excluding day-only sessions) per year, and for which 80% of activity is concentrated in at least 35 activity groups (as defined by the GHM Manual);
- Group 5: Facilities performing less than 500 stays (excluding day-only sessions) per year.

BONUS AND PENALTIES

Before 2019, quality was incentivised by the payment of a bonus, with a specific budget dedicated to IFAQ (€ 50 million in 2018). Since 2019, the IFAQ programme underwent a major reform and became an integral component of hospital funding. A portion of the budget previously allocated to APB was redirected to create a dedicated quality-based envelope (€ 200 million in 2019 = €150 million from the APB budget and € 50 million as in IFAQ 2018). Unlike the earlier purely incentive-based model, the new system distributes a portion of the APB budget (the dedicated quality-based envelope) based on the economic activity of the hospital and a quality score of the hospital related to comparative performance and progress on quality indicators. As a result, hospitals with lower quality scores can receive less funding than without IFAQ, which is why the mechanism can be perceived as penalising underperforming hospitals.

The calculation of IFAQ remuneration is carried out according to the following step:

1. An average quality score for the hospital is calculated based on the sum of the total remuneration score for each indicator ($RSI_{Indicator}$) divided by the sum of the weights for all eligible indicators:

Calculation of the average quality score for the hospital ($QShospital$):

$$QShospital = \frac{\sum_{Indicators} RSI_{Indicator} (score \times weight)}{\sum_{Indicators} weights \text{ for eligible indicators, see "indicator eligibility" }}^f$$

2. A weighted average quality score is calculated for all hospitals within the same group. For each hospital, the economic activity is valued using the GHS tariffs and supplements set for the year N-1.

Calculation of the weighted average quality score for the group ($QSGroup$):

$$QSGroup = \frac{\sum_{hospitals-group} Economic\ activity_{hospital} * QShospital}{\sum_{hospitals-group} Economic\ activity}$$

3. A neutral remuneration rate is also calculated:

$$Neutral\ remuneration\ rate = \frac{Budgetgroup}{\sum_{hospitals-group} Economic\ activity}$$

4. The total IFAQ remuneration for the hospital is then calculated using the following formula:

$$IFAQ\ remuneration = Economic\ activity_{hospital} * Neutral\ remuneration\ rate * \frac{QShospital}{QSGroup}$$

Moreover, since 2024, a specific adjustment is also made for indicators related to hip and knee replacement ('orthopaedic indicators'). In this case, real penalties are given for non-performing hospitals (having an $RSI_{Indicator}$ of 0 for orthopaedic indicators). Indeed, for non-performing hospitals,

^f Example: indicator 1: score 0.5 – weight 1; indicator 2: score 0.5 – weight 1; indicator 3: score 1 – weight 0.5; indicator 4: score 1 – weight 0.5 => $(0.5+0.5+0.5+0.5)/(1+1+0.5+0.5) = 2/3$

an amount is deduced from their IFAQ remuneration to be redistributed to performing hospitals (having an RSI_{Indicator} of 1 for orthopaedic indicators). More details can be found in the [technical note 2025](#).¹⁸¹

TIME LAG BETWEEN PERFORMANCE MEASUREMENT AND PAYMENT

In IFAQ 2025, the year 2023 (N-2) was used for orthopaedic indicators, the last monthly result available on 20 September 2024 (N-1) was used for eHealth indicators issued from the HOP'EN programme, and the results available on 25 October 2024 (N-1) were used for all other indicators.

In IFAQ 2024, the year 2023 (N-1) was used for orthopaedic indicators, the last monthly result available on 20 September 2024 (N) was used for eHealth indicators issued from the HOP'EN programme, and the results available on 31 October 2024 (N) were used for all other indicators.

The change between IFAQ 2024 (performance mainly measured based on year N) and IFAQ 2025 (performance mainly measured based on year N-1) was decided by the DGOS to align the timetables with the year used to determine the economic activity (= based on the year N-1).

Concerning the payments, since 2022, hospitals receive a monthly advance payment based on the previous IFAQ allocation (N-1). This advance is then subject to adjustments according to the final amount of the IFAQ allocation, no later than the fourth budgetary circular (i.e. the end-of-year budget circular). Before 2022, the payment was in one time at the end of the process (no advances).

INDICATOR ELIGIBILITY

Indicators are mandatory only when minimum eligibility criteria are met. These criteria are defined for each indicator (the so-called threshold for mandatory data collection – '*seuil d'obligation de recueil*') (see Table 6). For example, for patient-experience-based indicators, eligibility requires that at least 500 patients have responded, and no more than 75% of respondents are aged 75 years or older.

Indicators that do not meet these minimum criteria are considered non-eligible and are therefore excluded from the calculation of the hospital's quality score (see the details on the calculation of the quality score for the hospital (QShospital) in the section 'bonus and penalties').

In addition, facilities that fail to report one or more mandatory indicators are classified as Non-Respondents (NR). These facilities are penalised in the IFAQ calculation, as the remuneration score of the indicator is null for non-respondents.

Table 6 – Minimum eligibility criteria for 2025 IQSS indicators*

Indicator	Minimum eligibility criteria
<i>Patient experience and satisfaction – >48h in MCO</i>	At least 500 patients have responded, and no more than 75% of respondents are aged 75 years or older
<i>Patient experience and satisfaction after outpatient surgery</i>	
<i>Appropriateness of additional contact precautions for patients with healthcare associated infection (e.g. MRSA)</i>	At least 10 stays
<i>Quality of the discharge summary letter after outpatient surgery</i>	At least 31 stays
<i>Orthopaedic indicators</i>	At least 10 stays

*Similar criteria were set in the previous IFAQ programme (2019-2024)

2.2.4.3 Hospital participation

Before 2016, during the experimental phase, participation was voluntary. Participation became mandatory for MCO hospitals starting in 2016.



2.2.4.4 Evaluation strategy

DATA VERIFICATION PROCESSES

Before public reporting and use in the IFAQ calculation, data undergo external quality controls. Quality control is conducted within the framework of national inspection-control priorities (*'orientations nationales d'inspection-contrôle'* – ONIC), at the request of the General Inspectorate of Social Affairs (*'Inspection Générale des Affaires Sociales'* – IGAS). Since 2013, the HAS and the DGOS jointly coordinate these controls, which are carried out by the ARS. The control process is based on a random selection of healthcare facilities and focuses primarily on the detection of over-scoring. The objective is to identify cases in which facilities may have significantly over-rated certain items within one or more indicators in order to reach a higher performance score. Over-scoring is explicitly distinguished from simple reporting errors. The ARS determines whether the data collection for a given indicator in a given facility is validated or invalidated, according to predefined rules:

- For indicators derived from patient medical records, data collection is not validated if the review of several records reveals significant over-scoring.
- For indicators based on a survey completed by the facility (e.g. consumption of alcohol-based hand rub solution), data collection is not validated if discrepancies between declared and verified data lead to a downgrading of the performance class.
- For indicators based on patient survey (PREM), several criteria have been defined (invalid if : use of a non-official questionnaire, failure to respect patient eligibility criteria, non-compliant data collection or data submission, analysis that does not follow the HAS methodology).

When the results of the ARS control are consistent with those reported by the facility, the data collection is validated.

If an indicator's data collection is not validated, the results cannot be used in the IFAQ system and the indicator is labelled as 'not validated' in public reporting tools until the next data-collection cycle.¹⁹⁴

FINDINGS FROM THE LITERATURE

In a first study performed during the experimental phase and included in the review of the literature performed in Chapter 3 of the report, the difference-in-differences effect on the aggregated quality score (weighted sum of the seven quality indicators) was positive but not significant. Per indicator, only one indicator on seven showed a significant effect (pain assessment). The cited reasons were a low level of financial incentives, unattainable goals, and a too short study period.⁴⁸

A second survey conducted during IFAQ1 found that while hospital leaders participating in the programme were generally positive about the programme, frontline staff were largely unaware of its existence or identified unclear rules and time constraints as major barriers.¹⁹⁵ Moreover, according to a third survey performed in 2019, IFAQ1 led to only limited organisational change because most facilities did not really use it as a tool to improve quality. The study concluded that safeguards were needed to prevent the system from creating entrenched advantages, where high-performing facilities are consistently rewarded while lower-performing ones lose incentives to change as performance gaps widen.¹⁹⁶

IGAS EVALUATION

According to the report of the IGAS, published in 2024, the current IFAQ scheme suffers from several shortcomings that limit its effectiveness:¹⁹¹

- An unclear articulation between all quality-improvement levers: according to the IGAS report, the limitations of the IFAQ system are inseparable from broader weaknesses in the national quality policy. The articulation between IFAQ and other quality-improvement levers (see section 2.2.4.5) was considered as unclear, reflecting the absence of a coherent and unified national framework

for healthcare quality. The report highlights the fragmentation of regulatory instruments, the insufficient coordination between policies, and a dispersion of responsibilities among multiple administrative actors, resulting in parallel and poorly aligned governance structures across different healthcare sectors. The political signal associated with quality-based financing was nonetheless perceived as important. Nearly all facilities (around 95%) responding to the IGAS survey considered financial incentives necessary to encourage improvements in quality and patient safety, even though one third of respondents judged non-financial levers to be more effective.

- Complex and untransparent incentives, with a limited effectiveness: the IFAQ system itself was widely viewed as insufficiently effective and difficult to understand. Its complexity made it challenging for healthcare facilities to anticipate the financial consequences of quality-improvement efforts or to identify the determinants of changes in their allocation. A major difficulty was the inability of facilities to directly relate the funding received to their indicator results. This difficulty can be linked to some design features. First, for most indicators, a threshold is set so that 70% of facilities are remunerated. This impedes the facility to know if the threshold will be reached, as they are not aware of the performance of all others. Second, the final allocation is based on an aggregated global score that also takes into account the average score of the group. This obscures the relative weight of each indicator and can lead to paradoxical situations in which a facility's allocation decreases despite improvement if its progress is slower than the overall average.
- A weak mobilisation of healthcare professionals: IFAQ relies predominantly on indicators measured at the hospital level. According to the IGAS report, this limits their relevance for frontline clinical teams and reduces their usefulness as a management tool for quality improvement. Less than half of hospital governing bodies reported that IFAQ facilitated the mobilisation of teams around quality and patient safety issues. Communication about IFAQ within facilities also remained limited. Only 10% of facilities reported having communicated about the IFAQ allocation to all staff, while 20% reported no specific communication at all, including within quality-dedicated bodies. Awareness of IFAQ indicators among professionals was also low: about one third of physicians, 30% of department heads, and 20% of nurses were familiar with the indicators included in the IFAQ system. In addition, the IFAQ remuneration was rarely used to support quality-improvement strategies. Only around 35% of facilities reported using it to finance quality projects, while approximately 60% primarily use it to balance their annual accounts. It should also be noted that the lack of relevance of the indicators for the health professionals and the retrospective nature of data collection (too long time lag) was criticised.
- A limited perceived impact on quality improvement and undesirable effects: only four out of ten facilities considered that the IFAQ system has had a positive impact on quality and patient safety. Conversely, half of respondents reported undesirable effects, notably the risk of promoting an administrative vision of quality disconnected from the concerns of clinical teams and the excessive mobilisation of medico-administrative time.
- A limited financial impact: the financial weight of IFAQ in the remuneration of the facility was considered too small to be truly incentivising. Since 2022, the total IFAQ allocation has been set at € 700 million, representing about 1.1% of the economic activity⁹ of healthcare facilities. As a result, the portion strictly linked to quality indicators remained marginal and weakly discriminating.
- Sectoral differences: it should also be noted that the remuneration rate linked to IFAQ indicators was higher in the private sector than in the public sector, reflecting higher global IFAQ quality scores among private facilities (observation based on 2022 data). Cancer centres in particular

⁹ Valued using the GHS tariffs and supplements set for the year N-1, see section 2.2.4.2



had remuneration rates significantly above the average. Even if not clearly stated in the IGAS report, their stronger quality culture could be a potential explanation.

- Limitations of Patient-Reported Experience Measures: the use of patient-reported experience indicators (e-Satis) presented methodological weaknesses. According to the HAS, response rates remained low (7% in MCO and 12% concerning outpatient surgery in 2020), without guarantee that respondents were representative of the patient population. The small number of responses also made analysis at the service or department level impossible. In addition, nearly 80% of respondents to the IGAS survey considered that e-Satis does not accurately reflect patient experience, citing poor representativeness and broad questions that are often perceived as outside patients' scope of understanding.
- The use of redundant indicators and unmeasured dimensions of quality: indicators selected in IFAQ in the acute care (MCO) sector showed a high degree of correlation because some indicators were duplicated across different care settings (e-Satis and the quality of discharge summaries both at the hospital level and in outpatient surgery). Conversely, certain dimensions of quality were not captured by any indicator, including the quality of working life of healthcare professionals.
- A poor visibility of quality information for patients: public information on healthcare quality remained insufficiently accessible and poorly used by patients. The national information website QualiScope, managed by the HAS, attracted limited traffic, reflecting low public interest in the published indicators. A survey^h indicated that only 1% of patients choose a healthcare facility based on official quality indicators published by the HAS, and two thirds reported difficulties in accessing information on the quality of care delivered by facilities. According to the IGAS report, the low use by patients was partly explained by the nature of the indicators, which were mainly process-based and presented only at the facility level, without breakdown by service or pathology.

In response to these findings, IGAS recommended a profound reform of quality governance. This included the creation of a national cross-sector governance body responsible for defining and steering a multi-year quality roadmap integrating safety and appropriateness of care.

The report also argued that any reform of quality-based financing should prioritise incentives that are meaningful for healthcare professionals, within a quality policy framework that is coherent and easily understood. They proposed unifying, simplifying, and expanding existing quality-based financing mechanisms into a consolidated and restructured IFAQ system. Key recommendations include:

- Moving towards a remuneration per indicator, with a dedicated envelope for each, rather than aggregated scores;
- Basing remuneration on absolute performance thresholds (rather than based on relative rankings between facilities with 70% remunerated), with remuneration rates known in advance;
- Restructuring the indicator portfolio around transversal indicators measurable, where possible, at the department level, delivered within reasonable time frame and using automated data collection. This should include both permanent indicators common to all healthcare facilities and temporary indicators, included for a period of three to four years, and focusing on nationally and regionally identified priority areas for improvement.
- Complementing these transversal indicators with specialty- or pathology-specific outcome indicators covering the entire patient care pathway (across sectors). The use of PROMs besides PREMs was also promoted.

^h Online survey conducted by Institut Montaigne among a sample of 1 000 individuals, representative of the French population aged 18 and over.¹⁹¹

According to the IGAS report, implementing these reforms should require close involvement of healthcare professionals in defining relevant indicators, improvement of data-collection methods and risk-adjustment approaches, as well as upgrading health information systems through either the national health data system or dedicated clinical registries, supported by public investments. More details on the recommendations made by IGAS can be found in the IGAS report.¹⁹¹

FOLLOWING THE IGAS EVALUATION, THE NEW IFAQ 2026

Based on the IGAS evaluation, significant changes were made for IFAQ 2026, mainly to improve the predictability of the system:^{197, 198}

- Hospitals are no longer classified in groups, and the minimal threshold value is no longer based on results of other healthcare facilities (so that 70% were remunerated) but on absolute values determined a priori by the HAS. Based on these absolute thresholds, performance classes and related remuneration rates are defined (see Table 7). Information on these absolute thresholds was nevertheless not found for all indicators but for indicators on patient satisfaction for example, the following thresholds have been determined by the HAS based on results of the first survey:¹⁹⁹
 - Class A: ≥ 77.3 for patient satisfaction >48h in MCO and ≥ 79.7 for patient satisfaction after outpatient surgery;
 - Class B: < 77.3 and ≥ 74 for patient satisfaction >48h in MCO and < 79.7 and ≥ 76.5 for patient satisfaction after outpatient surgery;
 - Class C: < 74 and ≥ 70.7 for patient satisfaction >48h in MCO and < 76.5 and ≥ 73.1 for patient satisfaction after outpatient surgery;
 - Class D: < 70.7 for patient satisfaction >48h in MCO and < 73.1 for patient satisfaction after outpatient surgery.
- There is a separate envelope for each indicator. Therefore, no weighting is applied to calculate an overall quality score at the hospital level, but the size of the envelope reflects the weight given to an indicator. For IFAQ 2026, it was decided to increase the importance of the accreditation process. The envelope for the accreditation indicator accounts for almost 50% of the envelope for all MCO indicators (€ 280 million for accreditation and € 301 million for other MCO indicators, see Table 7). Moreover, the remuneration rate for facilities accredited with the mention 'high quality' was increased to 110%. It should also be noted that non-accredited facilities may receive a conditional payment. The ARS informs the facility before 30 April of the potential amount, subject to the submission of an action plan within a three-month period. The allocation is paid once the plan has been validated and must be used exclusively to implement the actions undertaken.
- Orthopaedic indicators are no longer included (infections and thromboembolic events after total hip and knee replacement) and the two eHealth indicators were replaced by a new indicator managed by the Digital Health Directorate ('*Direction du Numérique en Santé*' – DNS) (see Table 7).
- The financial incentive related to improvement (evolution) is more important for facilities in lower performing classes (+/-10% for class B and +/- 20% for class C).
- The amount allocated to each facility depends on its relative economic weight and on its performance class (determining the remuneration rate, see Table 7). In addition, to give stronger incentives for indicators having showed too little good performance in the previous year, a multiplier coefficient is also applied (not for the indicator on accreditation), determined based on the economic weight of facilities ranked in the two best performance classes (see Table 8), according to the results obtained for calculating the IFAQ allocation of the previous year. The allocation per indicator is calculated as follows:

$$\text{Envelope}_{\text{indicator}} \times \frac{\text{Economic activity}_{\text{hospital}}}{\sum \text{Hospitals Economic activity}} \times \text{remuneration rate} \times \text{multiplier coefficient}$$



- In the absence of data collection when mandatory (non-respondent – NR), or if the data are not validated, no amount is awarded for the indicator concerned (€ 0). Data collection becomes mandatory when minimum eligibility criteria are met (same as in IFAQ 2025, see Table 6). If the minimum eligibility criteria are not met (not appropriate – NA), a neutral rate is applied as follows:

$$\text{Envelope}_{\text{indicator}} \times \frac{\text{Economic activity}_{\text{hospital}}}{\sum_{\text{Hospitals}} \text{Economic activity}}$$

- When the budget envelope for an indicator is not fully used, the remaining funds (called '*reliquats*') are redistributed proportionally to the amounts already received.
- The calculation is done based on data available on 31 October of the previous year (N-1).
- Transitional measures are also put in place. In 2026, for some indicators (the eHealth indicator and biennial indicators not collected in 2025) the neutral-rate payment is used, independently of results and excluded from the calculation of the residual redistribution. In 2027, the e-Satis MCO >48h indicator will be calculated using the higher result from either 2025 or 2026.



Table 7 – Indicators and remuneration rate in IFAQ 2026

Indicator	Data collection	Budget (in million)	% total budget	Performance classes and remuneration rate
Patient-perceived quality of care				• A – The target is reached: 100% • B – 80% +10%/-10% if positive/negative evolution • C – 45% +20%/-20% if positive/negative evolution • D (if any) – 0% • NR (not reported or not validated): 0% • NA (non-eligible or not calculated as biennial): neutral rate
Patient experience and satisfaction, >48h in MCO	Annual	39.63	6.8%	
Patient experience and satisfaction after outpatient surgery	Annual	37.48	6.5%	
Quality of clinical care				
Assessment and management of pain	Biennial	39.62	6.8%	
Quality of practices in the prevention of healthcare-associated infections				
Appropriateness of additional contact precautions for patients with healthcare associated infection (e.g. MRSA)	Biennial	39.63	6.8%	
Quality of care coordination				
Quality of the discharge summary letter	Biennial	39.62	6.8%	
Quality of the discharge summary letter after outpatient surgery	Biennial	37.83	6.5%	
Rate of Patient Medical Record with a discharge liaison letter	Biennial	67.2	11.6%	Neutral rate
Accreditation process				
Accreditation level (2014 process or new process)		280	48.2%	• A+ Facilities accredited with the mention ‘high quality’: 110% • A Facilities accredited without the mention ‘high quality’ or with V2014 A: 100% • B Facilities accredited with V2014 B: 75% • C Facilities accredited with conditions or V2014 C: 30% • D Facility not accredited or “decision postponed” (V2014 D): 0%

Sources: IFAQ 2026^{197, 198}



Table 8 – Multiplier coefficient

<i>Economic weight of hospitals with class A</i>		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
<i>Economic weight of hospitals with class B</i>	0.1	1.5	1.4	1.3	1.2	1.1	1.0	1.0	1.0	1.0	
	0.2	1.4	1.3	1.2	1.1	1.1	1.0	1.0	1.0		
	0.3	1.4	1.3	1.2	1.1	1.0	1.0	1.0			
	0.4	1.3	1.2	1.1	1.0	1.0	1.0				
	0.5	1.2	1.2	1.1	1.0	1.0					
	0.6	1.2	1.1	1.0	1.0						
	0.7	1.1	1.1	1.0							
	0.8	1.1	1.0								
	0.9	1.0									
	1.0										

Sources: IFAQ 2026^{197, 198}

EVALUATION BY THE COURT OF AUDIT

In April 2026, the French Court of Audit (*Cour des comptes*) published a report assessing whether current policies effectively measure and improve the quality of care, foster a quality-oriented culture among healthcare professionals, and ensure patient involvement. Although the study had a broader scope and did not specifically focus on the IFAQ system, it highlighted several noteworthy findings.

The Court of Audit emphasised:²⁰⁰

- Gaps in quality measurement, notably the underreporting of adverse events and insufficient monitoring of hospital-acquired infections;
- An insufficient focus on the appropriateness of care;
- Limited awareness and use of the Qualiscope platform among both patients and healthcare professionals;
- The need to strengthen a culture of quality among healthcare professionals, alongside greater patient involvement. According to the Court of Audit, while patient satisfaction measurement has improved through the e-Satis surveys, response rates remain too low to be fully representative. In addition, they stress that greater emphasis should be placed on PROMs, such as quality of life;
- The absence of a coherent national strategy, highlighting the need for a dedicated governance structure to define and oversee a multi-year quality policy.

2.2.4.5 Integration with hospital strategy

OTHER QUALITY INITIATIVES

In parallel with IFAQ, other financial incentives based on quality have been introduced: quality-based remunerations for emergency services and for community hospitals or bundled payments for chronic patients with a renal disease. The mechanism introduced by the 2018 Social Security Financing Act to experiment with new healthcare organisations (*expérimentations dans le cadre de l'article 51*) is also often cited as a mechanism to improve quality.

A publication of IQSS indicators for each hospital via the [Qualiscope](#) website is also done (see section 2.2.4.7).²⁰¹

USE OF IFAQ IN THE HOSPITAL STRATEGY

IFAQ results could for example be used by the ARS during negotiations relating to the Multi-Year Contract of Objectives and Means (*contrats pluriannuels d'objectifs et de moyens* – CPOM), a contract signed between the ARS and the healthcare facility for a multi-year period (usually 3 to 5 years). As improving performance and internal management of facilities are among the goals covered by these contracts, the areas for improvement identified for IFAQ could, for example, be included as quality objectives in the CPOM.²⁰²

However, according to the IGAS evaluation (see section 2.1.3.4), less than half of hospital governing bodies reported that IFAQ facilitated the mobilisation of teams around quality and patient safety issues and awareness of IFAQ indicators among healthcare professionals was low.

2.2.4.6 Stakeholder involvement

During the development and analysis of IQSS indicators, two groups of persons are implied:

- A stakeholder group, composed of professional organisations and patient/user associations relevant to the indicator. The HAS informs this group about the development of the work, national results, and their evolution after each release. The group can flag potential issues early and helps disseminate the work and results through publications and conference presentations.



- A multidisciplinary expert working group, including healthcare professionals involved in patient care, medical information specialists and coders, as well as patients. Experts are selected through an online call for applications on the HAS website, through professional organisations and associations, or by co-optation from other HAS working groups. The expert working group contributes to the scientific and clinical validation of the indicator (particularly inclusion and exclusion criteria for the target population and risk factors) and to the analysis of results after each release.

However, as stated in section 2.1.3.4, the mobilisation of healthcare professionals around the IFAQ programme, as well as the perceived impact on quality, remain limited. For the future IFAQ programme, IGAS therefore recommends a closer involvement of healthcare professionals in the definition of relevant indicators.

2.2.4.7 *Methods used for transparency and accountability*

PUBLICLY AVAILABLE DATA

IFAQ indicators, together with other IQSS indicators not included in the IFAQ but listed as mandatory for publication, are published annually on the websites of the HAS (IQSS and accreditation level) or the Ministry of Health (eHealth indicators from the HOP'EN programme). Within two months of publication, each healthcare facility is also required to make its own results available to the public. These results must be presented using official publication templates or, if alternative formats are used, reproduced in full in a clear and understandable manner and clearly distinguished from other publicly available information. In addition, indicator results must be accessible to users upon entry to the facility, at a minimum through on-site displays in key public areas, inclusion in the patient information booklet or a dedicated document, and online publication on the facility's website (if they have a website).¹⁸⁵

Patients can access the results for a given hospital through the [Qualiscope](#) website. Nevertheless, according to the IGAS evaluation (see section 2.1.3.4), public information on healthcare quality in hospitals remains insufficiently accessible and poorly used by patients.

SPECIFICITIES FOR ORTHOPAEDIC INDICATORS

For orthopaedic indicators, results are reported annually to healthcare facilities using a funnel plot, reporting the position of the facility relative to all other anonymised healthcare facilities, either within or outside the three standard deviation (SD) limits, corresponding to a statistical error risk of 0.2%, and the two SD limits, corresponding to a statistical error risk of 5%. The position of the result relative to these thresholds assigns the facility a status of 'high outlier', 'outlier', 'non-outlier', or 'low outlier'.²⁰³

2.3 Clinical Practice Improvement Payment (CPIP) and Quality Improvement Payments (QIP) in Queensland, Australia

2.3.1 *Brief overview of the financing methods for acute hospitals*

In Australia, healthcare governance operates under a federated model where state and territory governments hold authority over the regulation and delivery of health services, including hospitals. In 2011, all states and territories signed a National Health Reform Agreement with the national (Commonwealth) government, where they commit to fund public hospitals using activity-based funding where practicable.²⁰⁴ Both public and private hospitals provide acute care, but the majority of services are delivered by public hospitals. In Queensland, public hospitals – to which the P4P programmes described below apply – represent 58% of total patient admissions (data 2023-2024).²⁰⁵

Before 2007, public hospitals in Queensland were funded through global budgets allocated based on historical budgets indexed annually.^{206, 207} In July 2007, a new funding model was introduced combining a population-based approach with case-mix funding.²⁰⁸ Population-based allocation to a given area depended on demographic and social factors, service use and mortality, while case-mix funding provided resources based on the number and type of cases treated. This model was first applied to 23, then to 33 hospitals, representing 90% of public acute care activity in Queensland.²⁰⁹ Smaller public hospitals were funded on a block funding basis, that aims to cover costs.

Following the National Health Reform Agreement, Queensland progressively adopted an activity-based funding system for public hospitals in 2011-2012. Queensland follows the national framework for activity-based funding, but applies its own state-specific commissioning approaches, rules, pricing, and purchasing arrangements.²¹⁰ For admitted acute care patients, the Australian Refined Diagnosis Related Groups (AR-DRG) classification is used. Services that are deemed not suited for activity-based payment (where economies of scale cannot be reached or activity-based funding cannot operate effectively) are block funded. This concerns notably small hospitals; teaching and research activity; non-admitted home ventilation services and highly specialised therapies.²¹⁰

Up to 2012, public healthcare services in Queensland were delivered in each geographic area through health service districts, whose number decreased over time (from 38 in 2005 to 15 in 2008). These districts were part of Queensland Health with the District CEOs responsible through Regional Directors to the Queensland Health Director General.²¹¹ Following the National Health Reform, they were replaced by 16 Hospital and Health Services (HHSs), which were established in 2012 as independent statutory bodies.^{212, 213} Each HHS is responsible for managing public hospitals and delivering health services within its designated geographic area. HHSs operate as providers and budget holders, while the Department of Health (re-named 'Queensland Health') is the purchaser of services, responsible for the overall management of the public health system, including monitoring the performance of HHSs.²¹² Service agreements between Queensland Health and each HHS formalise this purchasing arrangement. These agreements set out the range and volume of services to be delivered, along with the funding allocated for their provision.

Within this system, Queensland Health also passes through national pricing signals to influence quality. In particular, national mechanisms exist regarding rare serious incidents that are preventable but associated with severe harm or death (called “never events” or “sentinel events”); hospital acquired complications; and avoidable readmissions.^{210, 214} Different incentives, taking the form of lump-sum payments, volume adjustments or price adjustments within the activity-based funding model, are defined in Queensland purchasing strategy aiming to ‘incentivise high quality and high priority activity, support innovation and evidence-based practice, deliver additional capacity through clinically and cost-effective models of care and disincentivise care providing insufficient or no benefit for patients’.²¹⁵



2.3.2 Objectives and rationale of the programme

The first P4P programme for public hospitals in Queensland – the Clinical Practice Improvement Payment (CPIP) programme – was implemented following a quality scandal in 2005 that led to external reviews of the public healthcare provision.^{206, 216, 217} The response to the scandal involved strengthening quality oversight including new methods for identifying poor quality care and an emphasis on facilitating and encouraging good quality care, including encouraging clinical engagement.²¹⁸⁻²²⁰ The CPIP was part of the latter effort. The programme was implemented as a pilot project in 2007-2008, along with the new national funding model (see section 2.3.1). Indeed, there was a concern that the new case-mix funding model might unintentionally reward poor performance by paying for the complex care required to address serious preventable adverse events,²¹⁷ although there has been limited evidence of this being the case.

The CPIP programme was expected to help increase quality in two ways: first, by improving care in the specific areas measured by the indicators; and second, through broader, symbolic effects.²¹⁶ By signalling that quality is recognised and rewarded, the CPIP aimed to shift organisational attitudes and supports cultural change.

The three-years pilot phase ended in September 2010. The programme was renewed in a post-pilot phase that ended in March 2013.²²¹

Although the CPIP programme was not continued, Queensland Health introduced adjustments within the new Queensland activity-based financing model, aimed at improving quality. Regarding process of care, the 'Quality Improvement Payments' (QIP) provided rewards to incentivise uptake of good practice interventions.²¹⁴ The QIP programmes were developed collaboratively by Queensland Health and multidisciplinary 'clinical networks' of health professionals, patients, caregivers and key stakeholders.²²²

2.3.3 Design

The CPIP programme was developed as a pilot to test the role of financial incentives to promote quality of care. It was acknowledged that the information system, processes and literacy were not sufficiently developed to support a complicated incentive model.²²¹ Therefore, indicators were defined in terms of targets easily identifiable and achievable (see section 2.3.3.1) and were accompanied by a basic payment method (see section 2.3.3.2). Later on, the QIP programmes evolved, and moved towards more complicated indicators and financial incentives. This included expanding the reach of the QIP into care provided in non-acute settings such as community based mental health. For the sake of completeness, these components have not been excluded from the descriptions below.

2.3.3.1 Indicator design

CPIP: SELECTION OF INDICATORS

The CPIP pilot programme addressed the quality of clinical processes and outcomes.²¹⁶ The aim was to limit the number of indicators, focusing on a limited number of clinical areas selected on the basis of:^{217, 221}

- High disease burden (high incidence, mortality, morbidity, or cost);
- Significant variations between providers' performance;
- Good evidence base;
- Clinicians' support and control;
- Real time data collection (preferably electronic).

Process indicators were favoured over outcome measures as they were easier to measure, had the potential to predict outcomes, and clearly outlined the steps involved in clinical care.²²¹ Nevertheless,

outcome measures were still considered important. The view was that, at first, indicators should concentrate on clinical activities, and over time gradually expand to include patient-centred aspects of care, such as access to services and improvement of symptoms.

State-wide clinical networks (see section 2.3.3.6) were responsible for developing and endorsing indicators in their clinical area (for instance, Queensland Statewide Renal Clinical Network for indicators in the renal area).^{221, 223} The selection of indicators followed an iterative process.²¹⁶ It began with a draft set focused on diagnoses and procedures where gaps existed between current performance and evidence-based practice, as these elements were considered to be within clinicians' control. Extensive stakeholder consultation was then organised. This consultation phase lasted twelve months and was aimed to strengthen the legitimacy and acceptability of the indicators. Another objective was to determine whether the clinical community shared a common understanding of both the appropriate care processes for each diagnosis or procedure and the indicators used to evaluate the quality of those processes.

FIRST CPIP PILOT PHASE

Following the consultation step, seven indicators, from five clinical areas, were selected (see Table 9). It should be noted that not only process, but also structure/data indicators (e.g. the COPD indicator) were included. The selection of these indicators was primarily influenced by three factors:

- the ease with which data could be collected for each indicator,
- the degree of clinician agreement about its relevance,
- and the existence of a clinical network capable of overseeing engagement with clinical teams for reporting purposes.²²¹

For the mental health and stroke specialties, the identification of indicators and the establishment of data collection processes were easier because indicators were already in place and supported by functioning data systems within their clinical networks. In these cases, the CPIP programme basically applied a financial incentive to an existing clinically monitored activity. In other areas, the responsible clinical networks had to rapidly develop indicator definitions and create new data collection processes to enable monitoring.²²¹

Table 9 – CPIP indicators, first pilot phase (2008-2009)

Area	Indicator	Payment (in AUD)
<i>Mental health</i>	Patients with the DRG schizophrenia seen by a community mental health professional within 7 days following discharge from the same district mental health service provider.	125 per case
<i>Mental health</i>	Recording of antipsychotic injection medication on iPharmacy for DRG schizophrenia	30 per case
<i>Acute Stroke</i>	Patients with acute ischaemic stroke receiving antiplatelet therapy within 48 hours	50 per case
<i>Acute Stroke</i>	Patients receiving dysphagia screen (minimum requirement) within 24 hours	125 per case
<i>Emergency Department</i>	Patients aged 65 years and over (or 55 years and over if ATSI) who are discharged from an emergency department to home/nursing home and have evidence of communication back to general practitioner or local medical officer.	60 per case
<i>Discharge Medication Information</i>	An electronic Discharge Medication Record is completed (in case of adult patients returning to Residential Aged Care Facilities, a printed Home Medication Administration chart is completed)	50 per case



COPD	Pulmonary Rehabilitation Program meets a recommended evidence-based standard as endorsed by the State-wide COPD Clinical Network	20 000 per district (once)
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Note: DRG = Diagnosis Related Groups; ATSI = Aboriginal and Torres Strait Islander; COPD = Chronic Obstructive Pulmonary Disease. Sources: Duckett et al. (2008)²¹⁶ and Stockwell (2010)²²¹

Indicators listed in Table 9 were used during the first phase of the pilot programme, from January 2008 to March 2009.²²¹ From the start, it was decided that indicators would be reviewed annually and would change over time. However, the ideal duration of an indicator had not been determined.²²¹ Therefore, an experimental approach was used to adapt the indicator set for the second phase.

SECOND CPIP PILOT PHASE

As part of an ongoing informal improvement process, the list of indicators was revised before the second phase lasting from April 2009 to September 2010. The list of indicators used during the second phase is given in Table 10.

In addition to already included clinical areas, indicators were added in the following specialties: maternity, diabetes, cardiac, renal and intensive care. In the mental health and acute stroke, one of the two existing indicators was maintained while the other one was removed. The existing indicator regarding emergency departments was removed due to clinicians' concerns regarding the robustness of the electronic data collection methodology.²²¹ The discharge medication indicator was maintained, but the criteria for achievement were made stricter. The COPD area was extended and renamed as respiratory area.

Table 10 – CPIP indicators, second pilot phase (2009-2010)

Area	Change	Indicator*	Payment (in AUD)	Cap (in AUD)	Data collection
Mental health	Payment increased	Patients with the DRG schizophrenia seen by a community mental health professional within 7 days following discharge from the same district mental health service provider.	200 per case	600 000	Electronic data
Acute Stroke	Payment increased	Patients receiving dysphagia screen (minimum requirement) within 24 hours	300 per case	300 000	Manual teleform
Emergency Department	New	Number of EDs with total presentations over 10 000 per annum that have an ED Procedural Sedation Credentialing Program meeting minimum standards as endorsed by the Statewide ED Network	1 200 000 across both indicators		Manual audit
Emergency Department	New	Proportion of ED chest pain presentations that are risk stratified for cardiac risk as determined by the ED Chest Pain Protocol			Electronic data
Discharge Medication Information	Adapted	An electronic Discharge Medication Record is completed for adult patients who are 65 years and older with 4 or more medications; and paediatric patients who are 18 and younger with 4 or more medication (in case of adult patients returning to Residential Aged Care Facilities or paediatric patients returning home, a printed Home Medication Administration chart is completed). All medications must have a completed record of changes made in hospitals.	50 per case; 70 when rural and sole pharmacist	1 500 000	Electronic data
Respiratory	New	Individualised written COPD action plans developed to assist self-management of COPD symptoms and exacerbations, presented to the patient and/or carer and discussed with clinicians	120 per case	1 000 000	Manual audit
Respiratory	Adapted	Attendance at a minimum of 80% of Pulmonary Rehabilitation Program exercise training sessions and completion of post-program assessment	200 per case		Manual audit
Respiratory	New	Performance of complex lung function testing by suitably trained and experienced staff, and reporting of results to the treating physician within 5 working days of testing	120 per case		Manual audit
Maternity	New	Clinical Guideline Group develops 4 guidelines and they are adopted by 50% of hospitals	100 000 per group	400 000	Manual audit



Maternity	New	Each maternity unit meets a demonstrated standard in the implementation of the Management and Preterm Labour Clinical Guideline	7 500 per unit	300 000	Manual audit
Maternity	New	Each maternity unit meets a demonstrated standard in the implementation of the Management of postpartum haemorrhage Clinical Guideline	7 500 per unit	300 000	Manual audit
Maternity	New	Each maternity unit meets a demonstrated standard in the implementation of the Prevention of neonatal early onset group B streptococcal Clinical Guideline	7 500 per unit	300 000	Manual audit
Maternity	New	Each maternity unit meets a demonstrated standard in the implementation of the Management of neonatal respiratory distress incorporating the administration of continuous positive airway pressure Clinical Guideline	7 500 per unit	300 000	Manual audit
Diabetes	New	District diabetes education programmes are based on ongoing needs assessment of people with diabetes and the community as a whole	15 000 per district	500 000	Manual audit
Diabetes	New	District diabetes service contributes to regular analysis of avoidable admission data for diabetes	15 000 per district		Manual audit
Cardiac	New	Completion and submission of a survey identifying their priority areas for clinical practice improvement	5 000 per hospital		Manual audit
Renal	New	Patients with a diagnosis of End Stage Renal Disease receiving peritoneal dialysis are screened for nasal carriage of Staphylococcus aureus at least annually	500 per case	400 000	Manual teleform
Renal	New	Patients with a diagnosis of End Stage Renal Disease receiving peritoneal dialysis who are tested positive for the nasal carriage of Staphylococcus aureus receive mupirocin treatment	500 per case		Manual teleform
Intensive care	New	Number of intensive care patients with central lines for whom all five elements of the Central Line Bundle are documented on the central line checklist	150 per case	500 000	Manual teleform

* Some indicators are presented as targets to be achieved while others refer to the measured metric, the original wording is kept in the table. Source: Stockwell (2010)²²¹

CPIP POST-PILOT PHASE

Further changes were operated for the post-pilot phase that lasted from October 2010 to March 2013.

For instance, from 2011, the two indicators in the renal area were replaced by (1), the proportion of patients known to a nephrologist for three months or greater who commence dialysis through a functional arteriovenous fistula, arteriovenous graft, or Tenckhoff catheter and (2) patients who have received a renal transplant in the last two years who have undergone qualitative BK virus PCR serum testing in the past six months.²²³ This change followed feedback on the existing indicators that favoured units with a high prevalence of peritoneal dialysis patients. The new indicators aimed to allow equity of access for all renal units.²²³

Another example of change concerns the mental health area, with the establishment of a minimum target for services to achieve before securing a payment from the CPIP programme. An analysis of the indicator suggests this change may have provided additional motivation for improvement.²²⁴

QUALITY IMPROVEMENT PAYMENTS

Between 2012 and 2022, Quality Improvement Payments (QIPs) were embedded into the Queensland healthcare purchasing cycle. Indicators are defined in the 'Queensland Healthcare Purchasing Framework' as well as in each of the 'service agreement' documents established with the HHS. State-wide clinical networks are still closely involved in the development and endorsement of targets. Table 11 lists the various QIPs that were used between 2013 and 2022. Since 2022-2023, the indicators have been introduced into the Queensland Funding Model as state-based localisations. This provides HHSs a weighted activity unit gain which they can use to acquit against their annual funding as opposed to retrospective cash payments.

Table 11 – Quality Improvement Payments, 2013-2022

QIP	Payment for HHS that achieve targets on	13-14	14-15	15-16	17-18	18-19	19-20	20-21	21-22
NEAT/NEST	National Emergency Access Target (NEAT): proportion of patients admitted, discharged or transferred from the emergency departments within 4 hours of presentation) National Elective Surgery Target (NEST): proportion of elective surgery patients seen within clinically recommended times	x							
Fractured neck of femur	Percentage of patients with fractured neck of femur taken to theatre within 2 days	x							
Mental health	Percentage of mental health inpatient episodes of care receiving pre-admission community contact in the 1-7 days prior to an acute mental health admission	x							
Emergency department	Patient experience in Emergency Department	x							
Acute stroke care	Percentage of acute stroke patients receiving stroke unit care	x	x						



Smoking cessation	Percentage of patients that have been clinically supported to complete the smoking cessation clinical pathway		x	x	x	x	x	x	
Childhood immunisation	Percentage of children assessed as fully immunised for their age cohort		x	x					
Advance Care Plans	Proportion of patients who have been given the opportunity to contemplate an Advanced Care Plan		x	x	x				
Cardiac rehabilitation	Patients who access and attend cardiac rehabilitation services and programs			x	x				
Staff immunisation	Staff immunisation				x				
Patient wellness pathway	Wellness pathway completed and received for patients on hip, knee or shoulder elective wait lists					x			
Antenatal visits for First Nations women	First Nations women attending an antenatal session during their first trimester, and attending at least 5 antenatal visits; and First Nations women stopping smoking					x	x	x	x

Note: no data found for 2016-2017. Sources: J.Partridge²¹⁴, Queensland Health (2013, 2016, 2017, 2019, 2020 and 2022)²²⁵⁻²³⁰

2.3.3.2 Target definition and incentive structure

CPIP PROGRAMME

The CPIP programme consisted in a bonus incentive payment (additional to other payments), earned as a reward for achievement of the endorsed indicators (see section 2.3.3.1). This payment was made for non-recurrent expenditure items to support quality improvement and professional development (e.g. equipment purchase, database upgrade, provisions of after-hours allied health professionals, teamwork training).²²¹ As CPIP funding was a once off payment, it could not be used for capital investment, except in case a special approval was granted.

A competitive P4P model where only top performers received payment was intentionally avoided, as it was considered unfair.²²¹ It was anticipated that such an approach would discourage hospitals that felt they had little chance of outperforming the leaders and therefore might disengage altogether. Rather all districts had equal opportunity to participate.

In later years, it was encouraged that incentive payments were directed to the hospital unit. While payments were made to districts via usual budget processes, they had to allocate at least 80% of the fund received to the unit responsible for the clinical activity which earned the incentive payment.²²¹ This mechanism allowed for the existence of overhead costs.²¹⁶ The district management was also responsible for determining how to split funds between clinical units in case an indicator cut across the responsibilities of different units. In practice, the effective distribution of the funds to the units was not controlled and many examples emerged in which units had difficulties obtaining the earned incentive payments.²²¹

The budget allocated to the programme was AUD 8 million per year, corresponding to about 0.1% of the Department of Health total expenditure.²¹⁶ To prevent budget overrun, payments were capped, per indicator or group of indicators. Indeed, in case of an hypothetical 100% achievement rate for all indicators, the total budget necessary in the second pilot phase would have been AUD 12 million.²²¹ However, in practice, the caps were never reached.

The payment mechanism remained unchanged during the three phases of the programme, but the amounts were reviewed annually, and changed over time along with the selected indicators.²²¹ An overview of the amounts used during the second pilot, along with capped amounts and the way data were collected, is presented in Table 10. As a comparison, the average price paid per patient in the case-mix funding system in 2007-2008 was AUD 3 800.²¹⁶ The CPIP bonus payment represented an increase in marginal revenue of 1% to 3% per patient.²¹⁶ Incentive payments were mainly defined at the patient activity level, but for some indicators, payments were calculated at a different level (unit, district, etc.).

Payments were made twice a year.²²¹ They were based on six-month evaluation periods for the indicators, except the first payments that were based on a three-month evaluation period. Payments made in January were announced in November. They were based on data from April to September (that needed to be submitted before the end of October to be eligible). Payments made in July were announced in May and were based on data from October to March, submitted before the end of April.

QIP PROGRAMMES

QIP payments were made to the HHS. Table 12 describes the monetary incentives used in the stroke QIP programmes.

Some QIP programmes were progressively transformed into other purchasing incentives, as illustrated in Table 13 for stroke care and in Table 14 for smoking cessation. This reflects a shift in payment mechanisms as maturity increases. From bonuses for achieving a target, the system progressively moved towards bonuses based on achievement of best practice for individual patients, more aligned with the English Best Practice Tariff system (see section 2.3.3.5).² The last QIPs were used in 2021-2022. Since 2022-2023, only other purchasing initiatives are used.

2.3.3.3 Hospital participation

CPIP PROGRAMME

Participation to the CPIP was voluntary. To be eligible for bonus payments, units in the concerned clinical areas had to collect and submit relevant data to the Department of Health. In a survey administrated to clinicians in the five original clinical areas included in the programme, more than 50% of the respondents stated that their unit was able to achieve its indicator.²¹⁶ However, only 37% stated that their unit effectively received the incentive payment associated with the achievement. Reasons for that include conflict with district management and lack of transparency regarding the funding (earned incentive payments were not effectively distributed to the unit), as well as issues with the data collection process.

In the same survey, the main barriers to participation were identified.²¹⁶ The dominant reason was a lack of resources, either to perform and improve care, or to collect the data. Many issues (time, access, accuracy) were identified regarding data collection. The lack of leadership and support from management was also identified as a barrier.

Table 12 – Monetary incentives in the stroke QIP programmes

Period	Monetary incentive (in AUD)	Available fund pool (in AUD)
July to December 2012	117 500 per site	2 500 000 (6-month period)
January to June 2013	117 500 per site	2 500 000 (6-month period)
July to December 2013	105 000 per site	2 500 000 (6-month period)
January to June 2014	Proportional to district admissions	2 500 000 (6-month period)
July 2014 to June 2015	Proportional to district admissions	4 000 000 (12-month period)

Sources: Grimley et al. (2023, 2025).^{2, 3}

**Table 13 – Quality Improvement Payments and purchasing incentives for acute stroke care**

Period	Type	Indicator
<i>July to December 2012</i>	QIP	Plans for developing new or upgrading existing stroke units
<i>January to June 2013</i>	QIP	Percentage of acute stroke presentations admitted to stroke unit (hospital level). Target for new stroke units: 20%. Target for established stroke units: 50%.
<i>July to December 2013</i>	QIP	Percentage of acute stroke presentations admitted to stroke unit (hospital level). Target for new stroke units: 50%. Target for established stroke units: 75%.
<i>January to June 2014</i>	QIP	Percentage of acute stroke presentations admitted to stroke unit (district level). Target for regional hospitals: 60%. Target for metropolitan hospitals: 75%.
<i>July 2014 to June 2015</i>	QIP	Percentage of acute stroke presentations admitted to stroke unit (district level). Target: 75%.
<i>From July 2015</i>	PI	Acute stroke presentations admitted to stroke unit. No target: incentive per case: 10% loading to DRG inlier rate.

Note: QIP = Quality Improvement Payment; PI = purchasing incentives. Sources: Grimley et al. (2023, 2025).^{2, 3}

Table 14 – Quality Improvement Payments and purchasing incentives for smoking cessation

Period	Type	Indicator
<i>2014-2015</i>	QIP	Targets relating to a minimum threshold for reporting of smoking status had to be met and completion of a smoking cessation clinical pathway was required for a HHS to receive the QIP. Scope: adult acute care patients with length of stay of 2 or more overnights.
<i>2015-2016 to 2017-2018</i>	QIP	Targets relating to a minimum threshold for reporting of smoking status had to be met and completion of a smoking cessation clinical pathway was required for a HHS to receive the QIP. Extended scope including mental health care patients.
<i>2018-2019</i>	QIP	Targets relating to a minimum threshold for reporting of smoking status had to be met and completion of a smoking cessation clinical pathway was required for a HHS to receive the QIP. Extended scope including same-day episodes.
<i>From 2019-2020</i>	PI	Payment (AUD 37) for each in-scope episode of care where the patient has been reported as a smoker; and a clinician has completed page one of the Smoking Cessation Clinical Pathway form.

Note: QIP = Quality Improvement Payment; PI = purchasing incentives. Source: Queensland Health (2021).²³¹

QIP PROGRAMMES

Following the 2012 reform, QIP programmes were included in the service agreement negotiated between the Queensland Health and each HHS. This document determines the services that Queensland Health will purchase from the HHS and how much it will pay for the provision of these services. QIP programmes were part of these payment arrangements and therefore applied to all HHS.

2.3.3.4 Evaluation strategy

FORMAL EVALUATION OF THE FIRST CPIP PILOT PHASE

The CPIP programme was launched as a pilot programme with the aim of testing whether P4P improves the standardisation of clinical practice according to best practice guidelines and reduces unjustified variation.²³² It was planned that quantitative and qualitative evaluation would be conducted. A PhD thesis was conducted on the attitudes of clinicians, the design of the programme and on its financial cost, focusing on the first pilot phase.²²¹ No further formal evaluation seems to have been published after that.

The PhD thesis identified significant differences between clinical areas in the amount earned from the programme, which did not reflect better performance, but inequity in the initial distribution of funds between the indicators (that was determined by the volume of cases and payment tariff). For instance, the discharge medication indicator yielded AUD 2 418 150 bonus during the first phase of the pilot whereas stroke indicators only brought AUD 221 550.²²¹ Significant differences were also observed between districts, where three large districts secured more than 60% of total payments. It should also be noted that some indicators (notably the discharge medication indicator) generated more dispersed bonuses across the state than others. Such indicator allowed small hospitals and children's hospital to also benefit from the scheme.

A cost analysis was performed for mental health indicators, that showed that the cost of recording data was much smaller than the bonus earned (AUD 7 346 compared to AUD 397 050).²²¹ It was therefore judged that the programme was worth it, at the condition that the payment actually reaches the recipient clinical unit. However, as described earlier (see section 2.3.3.3) a major failure was observed regarding the actual distribution of funds.

The thesis also demonstrated that the attitudes of clinicians regarding the CPIP programme were reasonably positive.²²¹ Although the aim of the study was not to evaluate whether the CPIP programme increased quality or reduced variation, it showed that an intermediate goal (bringing the symbolic message that quality is valued and rewarded) had been achieved.

QIP FOR STROKE CARE

Grimley et al. (2023) analysed the impact on mortality of the QIP programme for stroke care using an interrupted time series analysis.² They found significant improvements in stroke unit access, reduced regional disparities, and a sustained decline in six-month mortality. Interestingly, no change in outcome was associated with the switch from the QIP scheme (payment for achieving a target) to a Queensland Funding Model localisation (increased DRG tariff). In a complementary study, Grimley et al. (2025) found no impact of the QIP programme on hospital length of stay, costs, or readmissions, concluding that the programme was associated with improved value for healthcare expenditure.³ Comparing Queensland hospitals to other hospitals in Australia, Cadilhac et al. (2019) found a positive impact of the QIP financial incentives for stroke on various composite process indicators.²³³

The positive impact of the QIP stroke programme was attributed to substantial room for improvement as the baseline access to stroke units was very low and marked by geographical variations.² Nevertheless, the authors acknowledged that design aspects of the QIP programme may have contributed to its success, namely the extensive clinician involvement and the fact that the targets were set in absolute rather than relative numbers.²

QIP FOR SMOKING CESSATION

It has been reported that the QIP for smoking cessation positively impacted the rate of assignment of tobacco use diagnosis codes.²³¹ Focusing on acute mental health inpatient units, Pelter et al. (2020) showed that the recording of the smoking status increased during the two-year period following the QIP implementation (from 88% in October 2015 to 97% in September 2017).²³⁴ The increase was observed in all but four services, that started with high rates that remained high throughout the period



(average rates over 90%). At the same time, the percentage of smoking patients who have completed the smoking cessation clinical pathway (a brief smoking cessation intervention) increased in all services (from 38% to 73% statewide). In a following study, Pelter et al. (2023) showed that those high rates were maintained during the next phase of the programme (from October 2017 to October 2020).²³⁵

2.3.3.5 *Integration with hospital strategy*

Beyond the QIPs described above, other elements of the Queensland purchasing model are related to quality and performance.

PERFORMANCE FRAMEWORK AND KEY PERFORMANCE INDICATORS

Queensland Health's approach for public hospital performance management is described in the 'Health Performance and Accountability Framework'.²³⁶ The framework applies to all HHSs. As said earlier, HHS are responsible for the provision of public healthcare services and Queensland Health acts as a buyer. In that context, HHSs are also accountable for their own performance. In particular, the service purchase from Queensland Health is subject to the attainment of performance standards.²¹⁵ As long as these standards are reached, HHS have discretion to prioritise one service over another.²¹⁴

A few Key Performance Indicators (KPIs) and Patient Safety Risk Events (PSREs) are defined in the Framework and are assessed quarterly.²³⁶ KPIs monitor the delivery of key strategic objectives and statewide or national targets while PSREs monitor unplanned or unintended events that could or did result in harm to a patient (see Table 15). HHSs are expected to ensure that their performance does not fall into the 'not performing' category for any of these indicators (i.e. performance target is not reached and performance is outside a given tolerance range).

ADDENDUM TO THE NATIONAL HEALTH REFORM AGREEMENT

Since 2017, Queensland HHS funding and purchasing guidelines include pricing adjustments aiming at 'improving health outcomes, avoiding funding unnecessary or unsafe care and decreasing avoidable demand for public hospital services'.²¹⁰ These adjustments are aligned with the 2017 addendum to the National Health Reform Agreement stating that safety and quality should be integrated into the pricing and funding of public hospital services. These adjustments are of three types:²¹⁰

- Sentinel events (since 2017): these are adverse patient safety events that are wholly preventable and result in serious harm to, or death of, a patient. Queensland uses the nationally developed list for (currently) ten sentinel events.²³⁷ In case of a sentinel event, no funding is provided for the episode of care.
- Hospital acquired complications (since 2018): HAC are complications for which clinical risk mitigation strategies may reduce, but not necessarily eliminate, the risk of that complication occurring. In Queensland, for 13 of the 16 nationally agreed HACs,²³⁸ the DRG tariff is reduced when a patient suffers one or more of the designated HACs.
- Avoidable hospital readmissions (since 2021): the DRG tariff is reduced when a patient is readmitted within a certain time interval, the readmission is clinically related to the initial admission and the readmission could have been avoided through improved clinical management and/or appropriate discharge planning in the initial admission.

It is worth noting that, in a parallel programme organised at the national level, funding to the states was reduced for poor performance on these clinical quality measures.

Table 15 – Headline Performance Measures (2025/26 – 2027/28)

Number	Domain	Indicator
Key Performance Indicators (KPIs)		
001	Trauma and Illness	Ambulance ramping
002	Planned Care	Total elective surgery wait list stabilisation
003	Planned Care	Elective surgery: percentage of patients who are treated within the clinically recommended time
004	Planned Care	Gastrointestinal endoscopy: percentage of patients who are treated within the clinically recommended time
005	Planned Care	Specialist outpatients: percentage of patients who receive their initial specialist outpatient appointment within the clinically recommended time
006	Stewardship	Missed opportunity to treat
007	Chronic and Complex	Potentially preventable hospitalisations
008	Prevention, Early Intervention and Primary Healthcare	Potentially Avoidable Deaths
009	Stewardship	Hospital Acquired Complications
010	Stewardship	Full Year Forecast Operating Position
Patient Safety Risk Events (PSREs)		
011	Trauma and Illness	Ambulance ramping events exceeding 2.5 hours
012	Trauma and Illness	Emergency department length of stays greater than 24 hours

Source: Queensland Health (2025)²¹⁵

PURCHASING INCENTIVES

As stated above, the system progressively moved away from QIPs (bonuses for achieving a target) towards bonuses based on achievement of best practice for individual patients, more aligned with the English Best Practice Tariff system.² The last QIPs were used in 2021-2022. Since 2022-2023, only other purchasing initiatives are used. These incentives take the form of lump-sum payments, volume adjustments or price adjustments within the activity-based funding, as illustrated in Table 16 for 2022-2023.

2.3.3.6 Stakeholder involvement

State-wide clinical networks are formally recognised groups, including health professionals, patients, caregivers and key stakeholders, established to provide expert advice and leadership to improve patient care and experiences.²²² There are currently 22 clinical networks, covering a range of health care specialties (e.g. cancer, cardiac, maternity and neonatal, intensive care, renal) and priority groups (e.g. Aboriginal and Torres Strait Islander, child and youth). They were involved in the development of CPIP and QIP indicators. In particular, clinical networks were responsible for developing and endorsing indicators in their clinical area.

From the beginning, the CPIP programme recognised the importance of professional culture and values in the design of a payment system.²¹⁶ The support of clinicians was viewed as being imperative and was searched before the implementation of the first pilot phase.²²¹ Indicators used in the CPIP programme were developed by the clinical networks to ensure clinicians endorse them. However, the endorsement was not immediate, as clinicians often initially negatively responded to the use of



financial incentives. However, it appeared this scepticism was related to the appropriateness of the indicators, suggesting the importance of including clinicians in the design of the indicators.²¹⁶

In the evaluation of the first CPIP pilot phase (see section 2.1.3.4) it was identified that surveyed clinicians overall had a reasonable degree of awareness and understanding of the clinical indicators, agreed with the financial salience of the indicators, supported that the indicators were evidence based, and believed that achieving the clinical indicators would be good for their patients, that they could obtain the cooperation of other clinicians and support staff, and that unintended consequences were not a large problem.²²¹ However, in most cases, they disagreed about the influence of CPIP on their clinical behaviour and they did not perceive that they had control over achieving the clinical indicator. Nevertheless, there was a strong support in favour of the continuation of the programme, especially in the COPD, discharge medication, and stroke areas.

Table 16 – Payment incentives, 2022-2023

Payment incentive	Adjustment
Stroke care	10% loading to DRG inlier rate
Smoking Cessation	DRG weight loading equivalent to AUD 37 per case
Advance Care Plans	AUD 100 per new patient
Out-of-scope Services	Zero DRG weight for out-of-scope services
Emergency Department Did Not Wait	Zero DRG weight for Did Not Wait patients
Hospital in the Home (HITH) for Residential Aged Care Residents	For all in-scope admitted episodes with a HITH component and funded via a DRG: 12.5% loading to inlier price
Pre-Operative Elective Bed Days	Reduce number of long stay days by the number of pre-operative bed days, up to a maximum of three days.
Fractured Neck of Femur timely surgical access	Reduce DRG price weight by 20%
Telehealth provider - admitted	AUD 200 for Medical Officer and AUD 100 for Other Health Professional
Maternity care for First Nations women	Antenatal and postnatal clinics: 15% loading Smoking cessation: 5 DRG weight units

Source: Queensland Health (2022).

2.3.3.7 Methods used for transparency and accountability

As described earlier (see section 2.3.3.5), HHSs are accountable for their own performance, and this performance is monitored by Queensland Health as the purchaser of healthcare services. Along with Headline Performance Measures (KPIs and PSREs, see Table 15), other HHS performance indicators are measured in three domains: stewardship indicators (10 indicators in 2025-2026), outcome indicators (17 indicators), and safety and quality markers (6 indicators).^{215, 236} A formal performance review meeting takes place four times per year.²³⁶

Performance measures are also publicly available at state, HHS and facility levels on the website 'our performance' (<https://www.performance.health.qld.gov.au/>).

However, there is no explicit link between the indicators used for financial incentives, the ones used to monitor HHS performance, and the ones publicly available.

2.4 Commissioning for Quality and Innovation (CQUIN) framework in England

2.4.1 Brief overview of the financing methods for hospitals

ORGANISATION OF HOSPITAL SERVICES CARE

The National Health Service (NHS) in England provides compulsory universal coverage for all legal residents. It is primarily funded through general taxation and offers care that is largely free at the point of use, with only limited direct payments by individual patients, predominantly for pharmaceuticals, dental, and ophthalmic services.²³⁹⁻²⁴²

The NHS funding originates from a fixed annual allocation by the UK Parliament to the Department of Health and Social Care (DHSC).²⁴³⁻²⁴⁵ The DHSC delegates the operational management of the NHS, i.e. financial and strategic oversight responsibilities, and the funding to finance healthcare services to NHS England (NHSE), a statutory arm's-length body established by the Health and Social Care Act of 2012.^{240, 242-247} NHSE is currently undergoing structural reform, with plans announced in March 2025 for its abolition and reintegration into the DHSC over a two-year period.^{244, 245}

The delivery of healthcare services within the NHS is structured via an internal market, dividing the system into commissioning and provider roles.²³⁹ NHSE oversees funding flows, service planning, and strategic oversight, while local commissioning is undertaken by 42 Integrated Care Systems (ICSs), each led by a statutory Integrated Care Board (ICB).^{243, 244, 247, 248} These ICSs vary in size and governance but typically serve populations between 1 and 3 million.²⁴⁴ Funding allocation from NHSE to ICBs is determined by a needs-based formula to account for differences in relative needs.^{240, 243}

The ICBs are responsible for the planning and commissioning of most health services for their local populations. They were introduced in 2022 as successors to Clinical Commissioning Groups (CCGs) which acted as local commissioners since 2013, which themselves replaced Primary Care Trusts (PCTs).^{239, 240, 243, 247, 249} They contract with NHS and non-NHS providers for the delivery of a range of services, including elective, urgent and emergency care, maternity, mental health, rehabilitative care and community health services, through the NHS Standard Contract.²⁴⁸ Alongside the abolition of NHSE, the format and functions of ICBs are being reviewed.²⁴⁴

A range of specialised services (tertiary care) are directly commissioned at a national level and managed by NHSE through its regional teams.^{242, 244, 250} The four criteria for national commissioning of such services include the rarity/complexity of the condition, the expertise required, cost, and risk pooling considerations.^{242, 250}

Providers of secondary and tertiary care are organised into NHS trusts, with 134 acute and 61 non-acute trusts in 2025.^{244, 251} Each trust can manage one or multiple hospital sites. These hospitals are publicly owned and operated and nearly all hospital doctors and nurses are employed by the NHS. Patients need a referral from a general practitioner (GP) to access hospital treatment, except for emergency care.^{41, 244} Specialised services (e.g. rare cancers and genetic disorders) are typically delivered in teaching trusts and specialist providers.^{242, 244, 250}

In terms of spending, acute care accounted for 41.4% of the commissioning budget in 2023/24 (up from 38.4% in 2015/16), while specialised services represented 16.2% (up from 14.9%).²⁴³⁻²⁴⁵

HOSPITAL FINANCING

Hospital financing has evolved significantly over time. Prior to 2003, NHS hospitals operated under block contracts negotiated locally, largely based on historical budgets and expected activity. These arrangements did not adjust funding based on the volume of services actually delivered.^{240, 246, 249}

In 2003, England adopted an activity-based financing system known as Payment by Results (PbR). Under PbR, hospitals are paid according to nationally fixed tariffs adjusted for patient complexity, the NHS equivalent to the DRG-system.^{246, 249} By enhancing patient choice and linking financing to activity, the main purpose of PbR was to reduce waiting times by incentivising hospitals to increase supply,



stimulate competition based on quality rather than price and increase efficiency.^{240, 252, 253} Initially focused on elective care, PbR rapidly expanded to include outpatient, emergency, and non-elective care.^{240, 254} By 2016, nearly 90% of acute care contracts were financed under this system.²⁵⁴ However, by 2019, PbR payments made up just under 60% of acute healthcare, being increasingly augmented with other forms of payments such as block contracts and risk-sharing.²⁵⁴

PbR was effective at stimulating hospital activity and reducing waiting times but deemed less successful at incentivising care integration or preventive services. To address these limitations, NHSE initiated payment reforms from 2019/20 onwards. The Aligned Payment and Incentive (API) model, formalised as part of the new NHS Payment Scheme in 2022/23, replaced PbR for most hospital services. API combines a fixed payment (for expected levels of activity) with a variable component based on actual activity levels, particularly for elective and outpatient care.²⁴⁴ The fixed element supports financial stability, while the variable component preserves activity incentives.²⁴⁴ API is now the dominant system to pay for hospital services.

TOWARDS PAY-FOR-PERFORMANCE

Concerns that PbR might incentivise cost-cutting at the expense of quality in combination with an attempt to reduce prices to increase provider productivity, has contributed to the introduction of pay-for-performance mechanisms in England.^{240, 252}

Lord Darzi's landmark 2008 review report – *High Quality Care for All* – laid the foundation for a broader strategic reorientation towards a quality-focused NHS, combining intrinsic staff motivation with extrinsic incentives and enhanced accountability.^{255, 256}

The review²⁵⁶ emphasised empowering patients and professionals, measuring patient experiences, and clarifying what constitutes high-quality care across specialties by supporting the development of evidence-based quality standards and guidelines via an expanded role for the National Institute for Health and Care Excellence (NICE) and by providing easy access to NHS staff to information about high quality care. In addition, the review called for a comprehensive quality measurement framework that collects and publishes key metrics developed in collaboration with patients, the public and staff. It further proposed to give the care quality commission (responsible for inspection) new enforcement powers and to strengthen public reporting and accountability through, amongst other the legal obligation for NHS trusts to publish quality accounts in addition to financial accounts. Lastly, the groundwork was laid for several financial incentives to encourage and reward providers for delivering better outcomes, initiating three pay-for-performance schemes, i.e. the Commissioning for Quality and Innovation (CQUIN) framework, the Best Practice Tariffs and non-payment for never events.

CONCEPTION OF CQUIN

Against the background of the broader NHS quality agenda, and building on the experience of the Advancing Quality (AQ) programmeⁱ, the CQUIN framework was launched across England in April 2009 by the Department of Health.^{239, 253, 256-258} CQUIN linked a proportion of provider income – initially 0.5%, rising to a maximum of 2.5% – to the achievement of locally agreed quality improvement and innovation goals. It applied to providers of acute, ambulance, community, mental health, and learning disability services.^{240, 257-259}

Rather than constituting additional funding, CQUIN was financed through the withholding of part of the 2009 tariff uplift.^{250, 256} These withheld funds were released only upon the achievement of pre-agreed

ⁱ Advancing Quality (AQ) was the first large-scale hospital-based pay-for-performance initiative introduced in England. Launched in October 2008 in the North West NHS region (covering 24 acute hospital trusts), AQ was modelled on the US Premier Hospital Quality Incentive Demonstration. It incentivised performance on 28 quality indicators across five clinical areas, including three emergency conditions (acute myocardial infarction, heart failure, pneumonia) and two elective surgeries (coronary artery bypass grafting and hip/knee replacements). AQ was later absorbed into the national CQUIN programme.

quality targets.^{246, 250} Hence, CQUIN was a mechanism to condition existing payments on performance targets, making it more akin to a penalty scheme than a bonus structure.^{250, 259}

Although CQUIN was initially flexible and designed to support local priorities, the programme evolved over time towards greater standardisation. National indicators and targets were gradually introduced to better align the scheme with system-wide quality priorities, ensure consistency and facilitate benchmarking.^{239, 250}

Following the Health and Social Care Act 2012, oversight of CQUIN was transferred to NHSE in 2013. The framework was subsequently split into two streams: the CCG CQUIN, which applied to locally commissioned services (later managed by Integrated Care Boards), and the Prescribed Specialised Services (PSS) CQUIN, which covered nationally commissioned specialised services.^{41, 242, 250}

The CQUIN programme was suspended during the COVID-19 pandemic in 2020/21 and 2021/22.²⁶⁰ While reinstated temporarily, it was paused again from April 2024 onwards (see section 2.4.3.4).

2.4.2 Objectives and rationale of the programme

The core objective of the CQUIN framework was to support the provision of *'better [patient] outcomes through increased patient safety, clinical effectiveness, improved patient experience and more innovative service delivery'*, according to the Department of Health pre-introduction Impact Assessment (p. 1).^{253, 258} The inclusion of innovation was not centred on invention, but on the adoption and diffusion of proven innovations or best practices into everyday clinical operations across the NHS.²³⁹

The programme responded to concerns identified in Lord Darzi's 2008 *High Quality Care for All* review, which highlighted unwarranted variation in care quality across NHS providers and regions and recognised that the NHS system was not doing enough to support quality improvement and innovation efforts.

To address this, CQUIN was designed to *'support a cultural shift by embedding quality improvements and innovations as part of the commissioner-provider discussion everywhere through making the payment system reflect quality'* (p. 1).²⁵³ By embedding quality improvement goals into a contractual agreement, and attaching a modest but visible proportion of provider income to their achievement, the framework aimed to ensure that quality featured more prominently in strategic and operational discussions within provider organisation, encouraging engagement from senior hospital management.^{253, 256, 258} Attaching a proportion of income to the achievement of quality-related goals served both as a symbolic and financial signal that quality improvement should be central to institutional decision-making, ultimately leading to better patient outcomes.²⁵⁸

Two principles underpinned the scheme's original design. First, in line with the subsidiarity principle, the framework has explicitly been designed to allow commissioners and providers local flexibility.^{257, 258} Locally developed schemes were considered essential to ensure that schemes would reflect heterogeneous local needs and priorities and therefore viewed as more effective in achieving the overarching objective of improved patient outcomes.^{239, 253, 257, 258} Local flexibility was also intended to generate clinical engagement, ownership and enthusiasm, and avoid the disengagement that might arise from nationally imposed top-down targets.^{239, 240, 253, 255-259} Second, payments needed to be realistically earnable.²⁶⁰⁻²⁶⁵ The level of ambition embedded in each scheme was intended to represent a stretch beyond the baseline contractual quality and safety requirements, and challenge providers to aim higher than 'getting to the average', but without being so high as to be unachievable.^{257, 266} The intent was that the majority of CQUIN payments would be attained.²⁵⁷ Nationally standardised targets were initially avoided in favour of schemes tailored to local context, recognising that uniform goals could lead to either excessive burden or insufficient incentive, depending on the provider's starting point.



2.4.3 Design

The CQUIN framework applies to providers of acute, specialised acute, community, mental health, specialised mental health, and ambulance healthcare services. The following analysis focuses specifically on the programme design as it applies to providers of acute and specialised acute services.

Box 1 – Terminology in the CQUIN framework

In the CQUIN framework for **acute services**, a **scheme** refers to the overall incentive package of **goals** and **indicators** agreed between a provider and its commissioner. Each **scheme** comprises one or more **goals**, which describe the quality improvement objectives being incentivised. These **goals** are assessed using one or more **indicators**, which define whether the **goal** – or an element of it – has been achieved, thereby determining the associated payment.

In 2019, **goals** were organised into **four key areas**: prevention of ill health, patient safety, best practice pathways, and mental health (the latter not applicable to schemes for acute services). Since 2022, the terminology has shifted: the framework now refers to **clinical priority areas** rather than **goals** or **key areas**. These **clinical priority areas** remain closely aligned with earlier **goal** structures and are similarly measured through one or more **indicators**.

For **specialised acute services** (PSS CQUIN), the terminology and structure were initially different. Between 2013 and 2018, providers agreed with regional NHS England commissioners on a **package** composed of multiple **schemes**, selected from a national pick list. These **schemes** were linked either to general service delivery or to specific Programmes of Care (e.g. trauma, internal medicine, women and children, cancer, blood and infection). Each **scheme** varied in what was incentivised and in its technical design, incorporating various structure, process, or outcome **indicators** and **payment triggers**. From 2019 onwards, the structure and terminology of PSS CQUIN were aligned with those used in the acute services CQUIN framework.

2.4.3.1 Indicator design

The design of indicators within the CQUIN framework evolved significantly over time, shifting from locally defined schemes to centrally standardised goals and indicators. Initially launched in 2009 with strong local autonomy, the programme progressively moved toward national consistency, particularly following a major evaluation in 2013. Since 2019, nationally defined indicators have become the norm. In this subsection, we provide a description of this evolution, the types of indicators used, the process for indicator selection, and a more detailed overview of the most recent annual programme.

DIMENSIONS – KEY AREAS

In the initial phase of the CQUIN framework, national policy guidance specified that four core dimensions of quality should be addressed: safety, effectiveness, patient experience, and innovation.^{256-259, 267} Commissioners and providers were instructed to design CQUIN schemes that incentivised improvement in each of these areas.^{257, 258} Between 2009 and 2012, national CQUIN templates included explicit references linking each indicator to one or more of the four dimensions.^{267, 268} This practice was discontinued after 2012. An evaluation found that, for acute services, 58% of schemes did not include an indicator explicitly related to innovation. In contrast, indicators for the other dimensions were more consistently represented: 90% of schemes included safety, 94% effectiveness, and 92% patient experience.^{239, 258}

In 2013, compliance with a set of high-impact innovations (e.g. the use of telehealth, the exploitation of intellectual property, and the provision of wheelchair services) was introduced as a prequalification requirement for providers of acute services to access CQUIN funding.^{266, 269} This requirement was discontinued in 2014 and has not been reinstated.

Between 2013 and 2018, CQUIN schemes for specialised acute services were organised around Programmes of Care (see Box 1), including trauma, internal medicine, women and children, cancer, and blood and infection.^{264, 270-273} In the 2015 and 2016 guidance it was stated that CQUIN schemes should demonstrate measurable outcomes in terms of quality, effectiveness and efficiency.^{264, 271}

From 2019 onwards, CQUIN goals for both acute and specialised acute services were structured around four national priority areas, in line with the 2019 NHS Long Term Plan: prevention of ill health, mental health (typically not included in acute schemes), patient safety, and best practice pathways.^{260, 265, 274-276} Since 2022, formal reference to these key areas has been removed from CQUIN guidance, although many indicators continue to reflect the earlier structure.^{260, 265}

INDICATORS – LAST ANNUAL PROGRAMME

The 2023-2024 iteration of the CQUIN programme marked the final year of implementation before the scheme was paused from April 2024.^{265, 277} Under the NHS Standard Contract, each agreement between a provider and commissioner included a single CQUIN scheme comprising five indicators selected from a nationally defined list (see Table 17). The chosen indicators were those deemed most relevant to the services covered by the contract. Each indicator within a scheme carried equal financial weight. In cases where fewer than three national indicators were relevant for a given contract (given the services mix), commissioners had the option – though not the obligation – to supplement the scheme with additional local indicators. While commissioners and providers were encouraged to agree on the content of CQUIN schemes in good faith, the final decision on scheme priorities and focus rested with the commissioner.^{261, 265}

Providers may contract with multiple commissioners, for example when delivering both acute and specialised acute services or serving populations across several Integrated Care Systems. In such cases, NHS guidance strongly encourages commissioners to collaborate under a single contract, with one designated as the co-ordinating commissioner.²⁷⁸ A single CQUIN scheme is agreed under this arrangement. Where NHSE acts as an associate commissioner for specialised services, the selection of CQUIN indicators is expected to reflect the proportion of specialised services within the overall contract value.^{265, 277} For example, if specialised services account for 20% of the contract, one of the five indicators would typically relate to specialised care.

CQUIN indicators targeted a broad range of clinical areas.^{265, 277} Two indicators applied to both providers of acute and specialised acute services: vaccination uptake among frontline healthcare workers, and supporting patients to drink, eat and mobilise following surgery. Acute care indicators included timely switching from intravenous to oral antibiotics, adherence to diagnostic cancer pathways, early identification and monitoring of frailty in emergency settings, use of National Early Warning Score 2 (NEWS2) scoring in critical care, risk assessment for pressure ulcers, and timely communication of medication changes to community pharmacists after discharge. Specialised acute care indicators focused on timely treatment aligned with clinical guidelines (e.g. revascularisation for lower limb ischaemia, hepatitis C treatment, early-stage lung cancer management) and patient satisfaction with shared decision-making in specialised pathways.



Table 17 – National mandated goals and indicators included in CQUIN 2023-2024 for acute and specialised acute services

National goal	Targeted service	Indicator	Payment thresholds	Frequency of data collection	Calculation
Flu vaccinations for frontline healthcare workers	Acute; Specialised acute	Share of frontline staff with flu vaccination	Lower: 75% Upper: 80%	September to February	Whole period average
Supporting patients to drink, eat and mobilise (DrEaMing) after surgery	Acute; Specialised acute	Share of surgical inpatients who are supported to drink, eat and mobilise within 24 hours of surgery ending	Lower: 70% Upper: 80%	Quarterly	Quarterly average
Prompt switching of intravenous to oral antimicrobial treatment*	Acute	Share of patients still receiving IV antibiotics past the point at which they meet switching criteria	Lower: 60%* Upper: 40%*	Quarterly	Quarterly average
Compliance with timed diagnostic pathways for cancer services	Acute	Share of referrals for suspected prostate, colorectal, lung, oesophago-gastric, head & neck and gynaecological cancers meeting timed pathway milestones as set out in the rapid cancer diagnostic and assessment pathways	Lower: 35% Upper: 55%	Quarterly	Quarterly average
Identification and response to frailty in emergency departments	Acute (with A&E)	Share of patients aged 65 and over attending A&E or same-day emergency care (SDEC) receiving a clinical frailty assessment and appropriate follow up	Lower: 10% Upper: 30%	Quarterly	Quarterly average
Timely communication of changes to medicines to community pharmacists via the Discharge Medicines Service	Acute	Share of acute trust inpatients having changes to medicines communicated with the patient's chosen community pharmacy within 48 hours following discharge, in line with NICE Guideline 5, via secure electronic message	Lower: 0.5% Upper: 1.5%	Monthly	Whole period average
Recording of and response to National Early Warning Score 2 (NEWS2) score for unplanned critical care admissions	Acute (with critical care)	Share of unplanned critical care unit admissions from non-critical care wards having a timely response to deterioration, with the NEWS2 score, escalation and response times recorded in clinical notes	Lower: 10% Upper: 30%	Quarterly	Quarterly average
Assessment and documentation of pressure ulcer risk	Acute	Share of inpatients aged 18+ having a pressure ulcer risk assessment that meets NICE guidance with evidence of actions against all identified risks	Lower: 70% Upper: 85%	Quarterly	Quarterly average
Achievement of revascularisation standards for lower limb ischaemia	Specialised acute (with vascular services for lower limb arterial disease)	Share of patients that have a diagnosis of chronic limb-threatening ischaemia (CLTI) that undergo revascularisation (improve blood supply to prevent leg amputation), either open, endovascular or combined, within 5 days of a non-elective admission to vascular provider units	Lower: 45% Upper: 65%	Quarterly	Quarterly average

National goals	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025
Increase the number of patients with urgent and emergency care needs who are managed close to home, rather than in a hospital (A&E or inpatient) setting							x									
Systematic screening for Sepsis of appropriate patients and timely and appropriate treatment and review							x	x								
Reduction in antibiotic consumption and encouraging focus on antimicrobial stewardship and ensuring antibiotic review within 72 hours								x								
Reducing the impact of serious infections (Antimicrobial Resistance and Sepsis)									x	x						
Adherence to national antibiotic guidance in treatment of Lower Urinary Tract Infections in older people and antibiotic prophylaxis in elective colorectal surgery											x					
Appropriate antibiotic prescribing for UTI in adults aged 16+												x		x		
Prompt switching of intravenous to oral antimicrobial treatment															x	
Treatment of community acquired pneumonia in line with BTS care bundle												x		x		
Improvement of health and wellbeing of NHS staff								x	x	x						
Flu vaccinations for frontline healthcare workers											x	x		x	x	
Offering advice and guidance to referring GPs									x							
Availability of services and appointments on the NHS e-Referral Service										x						
Improving services for people with mental health needs who present to A&E									x	x						
Supporting proactive and safe discharge									x							
Uptake of three high impact actions to prevent hospital falls											x					
Screening and brief advice for tobacco and alcohol use in inpatient settings										x	x					

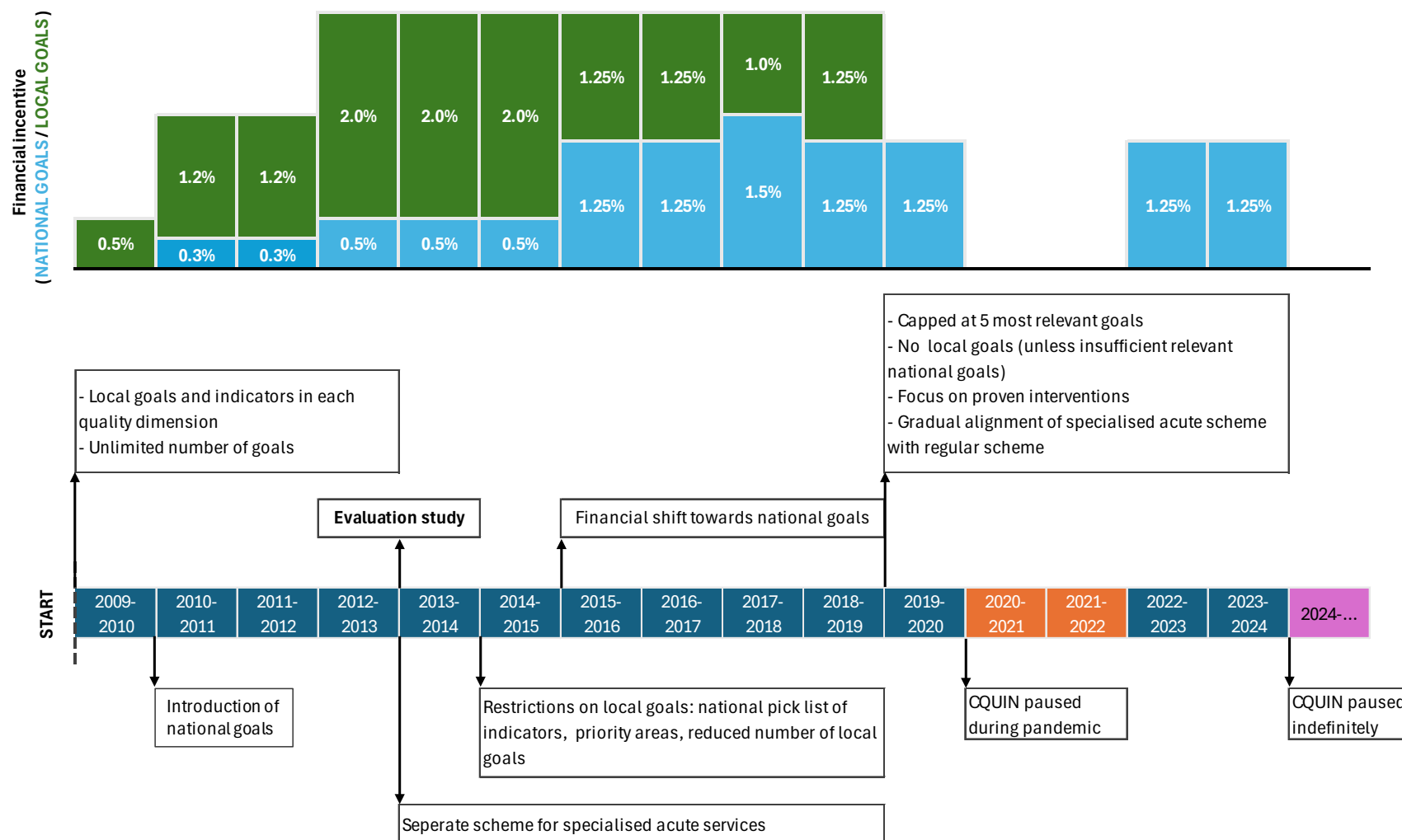
National goals	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025
Receipt of cirrhosis and fibrosis tests for alcohol dependent patients												x		x		
Increase share of patients to be managed in a same day setting for Pulmonary Embolus / Tachycardia / Community Acquired Pneumonia patients where clinically appropriate											x					
Adherence to evidence based interventions clinical criteria for a list of procedures												x				
Rapid rule out protocol for ED patients with suspected acute myocardial infraction (Excluding STEMI)												x				
Screening and treatment of iron deficiency anaemia in patients listed for major elective blood loss surgery												x		x		
Recording of and response to National Early Warning Score 2 (NEWS2) score for unplanned critical care admissions												x		x	x	
Supporting patients to drink, eat and mobilise (DrEaMing) after surgery														x	x	
Compliance with timed diagnostic pathways for cancer services														x	x	
Identification and response to frailty in emergency departments															x	
Timely communication of changes to medicines to community pharmacists via the Discharge Medicines Service														x	x	
Assessment and documentation of pressure ulcer risk															x	

Note: green = indicator included in the programme; orange = programme paused due to the COVID-19 pandemic; red = programme suspended. Some indicators are marked with an x during the orange (paused) period to indicate that they were selected and defined for use in 2020-2021 but were never implemented due to the pandemic.

Sources: CQUIN guidances 2008-2024.^{260-263, 265-268, 275-277, 279-286}



Figure 3 – Timeline with size of financial incentive and key changes in the CQUIN framework



Sources: CQUIN and PSS-CQUIN guidances 2008-2024^{260-268, 270-273, 275-277, 279-286}, McDonald et al. (2013)²⁵⁸ and Feng et al. (2019, 2024)^{242, 250}

INDICATORS – EVOLUTION

The design of indicators within the CQUIN framework has undergone a marked transition from local autonomy to national standardisation.^{257, 260-268, 271, 273, 275, 276, 279, 280} When the programme was introduced in 2009, it allowed for considerable bottom-up flexibility: providers and commissioners jointly developed locally tailored schemes, resulting in each provider having a unique package of goals, indicators, performance thresholds, and reward structures. National guidance nonetheless required each scheme to include goals and indicators spanning all four dimensions of quality (see above).²⁵⁹ It was anticipated that schemes would converge around commonly used performance measures, supported by a national website that enabled sharing of local schemes, and that new indicators would be developed only where no suitable national or regional alternatives existed. However, this expectation was not fulfilled.^{239, 253, 257-259}

An analysis of early implementation (see section 2.4.3.4) revealed that the early years of CQUIN saw substantial heterogeneity. In 2010-2011, CQUIN schemes for acute care providers employed 1 546 distinct indicators. Schemes included a median of 11 goals (ranging from 2 to 25) and 16 indicators (ranging from 3 to 52).^{239, 258}

Nationally mandated goals were introduced from 2010 and expanded in subsequent years. These were typically revised annually or biannually, with most goals used for two to three years (see Table 18). This shift accelerated following a national evaluation in 2013. While the evaluation acknowledged the value of local input in selecting goals and targets to promote clinical engagement, it concluded that the technical aspects of indicator design – particularly the specification of indicators, setting of thresholds, and calibration of reward levels – were best managed centrally.^{239, 258} Effective indicator design, it was argued, required an evidence-based understanding of the link between processes and outcomes and realistic assessments of providers' ability to influence those outcomes.^{239, 258} Local variation was also found to hinder benchmarking and led to duplicated effort in indicator development.

In response, from 2014, NHSE introduced a national pick-list of indicators to guide local goal selection.²⁸⁰ This was further refined in 2016 into a shorter list of 30 validated indicators grouped into seven priority areas.²⁶² Simultaneously, local discretion was further constrained: a cap of ten local goals per scheme was introduced in 2014, later replaced by a recommendation for a small number of locally selected goals.^{261-263, 280} Figure 3 provides an overview of some key changes over time.

From 2019 onwards, the programme required all indicators to be selected from a national list.²⁷⁵ However, CQUIN schemes continued to reflect local service configurations and priorities, as providers and commissioners retained discretion to select the most relevant five indicators per contract. Local indicators were permitted only if fewer than three suitable national indicators applied.

A separate Prescribed Specialised Services (PSS) CQUIN framework was introduced in 2013 for specialised acute services.^{242, 250, 264, 270-273} Prior to this, general CQUIN arrangements applied. In contrast to the acute services framework, all schemes and indicators under PSS CQUIN were centrally developed by NHSE, while the selection of schemes and performance thresholds remained subject to local negotiation. Between 2013 and 2018, PSS schemes were grouped by clinical Programmes of Care (see Table 19). Since 2019, the structure of PSS CQUIN has become more closely aligned with that of acute services, with a notable reduction in the number and complexity of schemes.^{260, 265, 275,}

²⁷⁶ In 2023, both schemes were formally integrated, with certain indicators designed to apply across both acute and specialised acute service providers.



Table 19 – National schemes / goals included in the CQUIN programme for specialised acute services, 2013-2024

	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025
Schemes – by programme of care (2013-2018)												
General Schemes												
Clinical outcome collaborative audit workshop	x	x	x									
Patient held self-care plans including contacts to access care in emergencies		x										
Monitor hand hygiene to reduce healthcare acquired infections		x	x	x								
Implement clinical utilisation review (CUR) for reduction in inappropriate hospital utilisation		x	x	x	x	x						
Use of the patient activation measurement survey to improve outcomes				x	x	x						
Incentivise appropriate use of cardiac devices to address patients need				x								
Optimise hospital use of high cost drugs					x	x						
Redesign service to adopt most efficient provider service models					x	x						
Ensure all relevant treatment options are discussed with patients					x	x						
Blood and Infection												
Haemtrack monitoring	x											
Joint scores in severe and moderate haemophilia A and B	x											
Bone marrow transplantation: Donor acquisition measure	x	x										
Registration and communication with GPs about the care of HIV patients	x	x										
Home delivery of Antiretroviral (ARV) medicines		x										
Shift to telemedicine care for clinically appropriate patients		x										
Reducing drug wastage		x										
Multi-drug / treatment resistance		x										
Participation of patients in clinical trials		x										
Embedding quality systems in HIV Networks		x	x									
Improve Hepatitis C Virus Operational Delivery Networks		x	x	x	x	x						
HIV: reducing unnecessary CD4 monitoring			x									
Bone marrow transplantation: comorbidity scoring of patients			x									
Improve Haemoglobinopathy Operational Delivery Networks			x	x	x	x						
Improve use of Haemtrack patient reporting system at home				x	x	x						
Incentivise automated exchange transfusions for sickle cell disease				x	x	x						
Cancer												
Impact of clinical nurse specialist (CNS) support on patient experience	x											
Participation of patients in clinical trials		x										
Long-term follow up of cancer patients		x										
Standardise the doses of systemic anti-cancer therapy (SACT)			x	x	x	x						

	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025
Preventing avoidable admissions for patients with a long term neurological condition			x									
Reduce delayed discharges from adult critical care				x								
Improve timely access to specialist and pre-empt costly complications				x								
Development of regional spinal surgery network, to discuss patient referral, selection for specialised surgery and optimum treatment option				x	x	x						
Women and Children												
Improving triaging of patients at high risk of familial breast cancer for clinical genetics appointments	x											
Timely discharge from Neonatal Intensive Care	x											
Rapidity of obtaining a tertiary level fetal medicine opinion	x											
Improve screening rate for retinopathy of prematurity	x	x										
Timely administration of total parenteral nutrition (TPN) for preterm infants	x	x										
Improved access to breast milk in preterm infants	x	x										
Preventing unplanned readmissions to Paediatric Intensive Care within 48 hours	x	x										
Monitoring and minimising the number of transfers out of region to a Paediatric Intensive Care	x	x										
Maximising use of aCGH as primary ante-natal test		x										
Standardising the children's cancer multidisciplinary team decision making process		x										
Improve reporting times for perinatal autopsies		x										
2-year outcomes for infants <30 weeks gestation			x									
Neonatal Critical Care: improving Data Completeness			x									
Standardised and equitable transition preparation across all patient groups			x									
Prevention of hypothermia in preterm babies			x									
Fetal cardiology assessment and specialist nurse input for patients with a suspected cardiac abnormality			x									
Neonatal unit admissions			x									
Improve asthma control in children within twelve weeks of referral			x	x								
Implement home monitor to pre-empt costly problems				x								
Apply mental health screening for paediatric in-patients with chronic condition				x	x	x						
Improve utilisation of efficiency of paediatric intensive care beds					x	x						
Optimise the use of neonatal care through improved community support					x	x						
Goals – closer alignment with acute service CQUIN scheme (2019-2023)												
Medicines optimisation and stewardship							x					
Supporting cystic fibrosis patients with self-management							x					

	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025
<i>Clinical utilisation review: avoiding inappropriate hospital stays</i>							x					
<i>Manage appropriate immunoglobulin use</i>							x					
<i>Multidisciplinary team oversight of specialised spinal surgery</i>							x					
<i>Reduce live donor work up times and organ decline rates</i>							x					
<i>Expand mechanical thrombectomy</i>							x					
<i>Improve completion of cirrhosis bundle in patients with decompensated cirrhosis</i>							x					
<i>Multidisciplinary Team oversight of high cost biologics use of severe asthma patients</i>							x	x				
<i>Optimal approaches to movement therapy for children with cerebral palsy</i>							x	x		x		
<i>Achieving progress towards Hepatitis C elimination within lead Hepatitis C centres</i>							x	x		x	x	
<i>Improving the quality of shared decision-making conversations</i>							x	x		x	x	
<i>Routine outcome monitoring in perinatal inpatient services</i>								x				
<i>Achievement of revascularisation standards for lower limb ischaemia</i>										x	x	
<i>Achieving priority categorisation of patients within selected surgery and treatment pathways according to clinical guidelines</i>										x		
<i>Flu vaccinations for frontline healthcare workers</i>											x	
<i>Supporting patients to drink, eat and mobilise (DrEaMing) after surgery</i>											x	
<i>Treatment of non-small-cell lung cancer (stage I or II) in line with the national optimal lung cancer pathway</i>											x	

Note: green = indicator included in the programme; orange = programme paused due to the COVID-19 pandemic; red = programme suspended. Some indicators are marked with an x during the orange (paused) period to indicate that they were selected and defined for use in 2020-2021 but were never implemented due to the pandemic.

Sources: PSS-CQUIN and CQUIN guidances 2013-2024.^{260, 264, 265, 270-273, 275-277, 286}

INDICATORS – STRUCTURE/PROCESS/OUTCOME

The CQUIN framework was established to improve patient outcomes. Initial guidance issued in 2009 encouraged the use of outcome measures wherever possible, including both clinical and patient-reported outcomes.²⁵⁷ However, it also permitted the use of process and structure indicators as proxies, provided there was a clear and demonstrable link to improved outcomes. This recommendation was not reiterated in subsequent guidance.

Early implementation data (see section 2.1.3.4) suggest that outcome indicators were relatively uncommon. An evaluation of acute care schemes in 2010 found that 62% of indicators related to processes or structures, while only 34% focused on outcomes.^{239, 258} For specialised acute services, evaluations of PSS CQUIN schemes from 2016 and 2017 reported no use of outcome indicators.^{242, 250} In these schemes, structural indicators, such as the establishment of regional networks, multidisciplinary teams, data infrastructure, or staff training, were more common than in acute care, potentially reflecting the need to support fixed-cost investments associated with service innovation.^{242, 250}

Although national policy encouraged the use of evidence-based indicators, evaluations identified limited documentation of supporting evidence. In 2010, only 19% of locally selected structure or



process indicators in acute care CQUIN schemes were explicitly reported as evidence-based.^{239, 258} Similar issues were found in the PSS CQUIN schemes of 2016 and 2017, where references were often lacking, making it difficult to assess whether incentivised processes were clearly linked to improved outcomes.²⁵⁰ From 2019 onwards, supporting documentation was included more systematically in the indicator specifications.^{260, 265, 275, 276}

The 2023-2024 national CQUIN scheme (see Table 17) relied almost exclusively on process indicators, alongside one patient-reported experience measure (PREM). It focused on incentivising service-line level improvements rather than organisation-wide performance. The process indicators were not risk-adjusted beyond the delineation of the relevant patient group.^{265, 277}

SELECTION OF INDICATORS

CQUIN schemes were renegotiated annually, as the programme was non-recurrent and subject to regular revision. This arrangement allowed the selection of indicators to reflect both evolving national strategic priorities, areas where there was widespread need for improvement across the NHS, and local healthcare needs.²⁶⁸ National goals typically aligned with broader NHS objectives, as set out in long-term strategic plans or visions, while local discretion in earlier years enabled commissioners and providers to tailor indicators to specific service contexts.^{239, 257, 258, 262, 274}

From the 2014–2015 guidance onwards, commissioners and providers were explicitly allowed to agree multi-year schemes to support longer-term service redesign, although these remained subject to annual confirmation in line with updated national CQUIN guidance.²⁸⁰

From 2019 onwards, CQUIN guidance outlined a set of design criteria intended to ensure that indicators supported focused, evidence-based improvements without introducing excessive administrative burden. Indicators were expected to:²⁶⁵

- highlight proven, standard operational delivery methods;
- support implementation of relatively simple interventions;
- form part of wider national delivery goals that already existed, thereby not adding new cost pressures;
- be explicitly supported by wider national implementation programmes;
- command stakeholder support.

In guidances of 2019 and 2020 reference was made to a CQUIN National Design Group to support the development and selection of indicators, consisting of representatives of commissioners, providers and clinical leadership.^{275, 276}

Each clinical process or method included in the national scheme had been tested with a range of providers to confirm its feasibility and to incorporate lessons from prior implementation. All clinical practices and interventions selected for inclusion were already in use within the NHS.²⁶⁵ Their incorporation into CQUIN aimed to highlight their benefits and encourage broader adoption by drawing on the experience of existing implementers. National clinical programmes, such as NICE guidelines and quality standards, as well as other relevant frameworks, provided support to facilitate delivery and embed the improvements into routine clinical practice.^{260, 265, 277, 286}

There were no formal rules for retiring goals or indicators. However, CQUIN was not intended to reward ‘business-as-usual’ activities.^{242, 267} Indicators that had consistently high performance levels or were deemed essential to routine care were typically retired or transitioned into mandatory requirements under the NHS Standard Contract.^{250, 261, 264, 268, 278, 280} Examples of the latter include the Friends and Family Test, the NHS Safety Thermometer, and Venous Thromboembolism (VTE) risk assessment. Time-limited use also applied to indicators focused on data collection. In 2019, several indicators perceived as overly bureaucratic or administratively burdensome were removed from the national scheme.²⁷⁵

DATA SOURCES

The calculation of CQUIN indicators in 2023-2024 drew on a range of data sources, including routinely collected hospital administrative data, national clinical registries, patient surveys, and hospital audit and performance reports.^{265, 277} For certain indicators, data were obtained through a dedicated reporting process established within the CQUIN framework. This involved structured data extraction from hospital information systems or case note reviews.

Most indicators were monitored and assessed on a quarterly basis, although some were evaluated across the full annual reporting period (see Table 17).^{265, 277} Performance was assessed using data collected during the same financial year in which the CQUIN scheme was applied, rather than relying on data from a previous period.

Over time, several CQUIN indicators were introduced that required the establishment of new data collection systems. In such cases, financial incentives were linked to initiating data flows and establishing baseline measurements for future performance evaluation.

2.4.3.2 Target definition and incentive structure

INCENTIVE TYPE AND SIZE

The financial incentive under the CQUIN framework was structured as a non-recurrent conditional payment, whereby a defined proportion of a provider's expected funding was withheld and made recoverable only upon achievement of agreed performance targets.²⁶⁵ CQUIN therefore did not involve additional funding.²⁵⁰ The maximum amount a provider could earn or forfeit was limited to the CQUIN share of its own contract, with no possibility of transferring funds between providers.

The value of the incentive evolved over time (see Figure 3). In 2009, the CQUIN incentive was set at 0.5% of the contract value, rising to 1.5% in 2010 and 2011, and reaching 2.5% between 2012 and 2018. For specialised acute services under the PSS CQUIN, incentive levels varied slightly between providers; those acting as lead providers in Operational Delivery Networks (ODNs) received higher shares than others.^{260, 264, 265, 271, 273, 275, 276} From 2019 onwards, the incentive level was reduced to 1.25% for CQUIN related to both acute and specialised acute services.²⁷⁵

In 2023, CQUIN payments were calculated as a percentage of the provider's total of the fixed API payment and the amount included in the expected annual contract value in respect of elective activity.^{265, 278} Payments were issued in full, in advance, through monthly instalments.²⁶⁵ Any underperformance against the nationally defined indicators resulted in end-of-year deductions, applied to the variable element of API payments. This approach differed from earlier years, when commissioners had greater discretion over payment timing: some commissioners issued CQUIN payments in advance with retrospective corrections, others paid only after targets or triggers were met, and some used a combination of both.^{275, 276}

In the early years of implementation, the majority of potential CQUIN earnings were tied to locally defined goals (see Figure 3). Until 2014, local indicators represented the primary basis for payments. From 2015 to 2018, national and local goals carried roughly equal weight. Since 2019, only nationally defined goals were incentivised.

ACHIEVEMENT VERSUS IMPROVEMENT

The CQUIN framework combined elements of both improvement-based and achievement-based incentives, with the balance changing over time. Payments were based on a provider's own performance, without comparison to or relative ranking between providers.²⁵⁰

In the early years of implementation, CQUIN schemes were locally negotiated, with goals, indicators, thresholds, and payment levels tailored to local needs and service context.^{239, 257, 258, 267, 268, 279} Targets could be defined as absolute levels adjusted to current performance, or as relative improvement



compared to a provider's own baseline, in both cases encouraging progress rather than rewarding standardised levels of achievement.

As nationally defined indicators and benchmarked data became more widely available between 2013 and 2018, the framework gradually evolved. Most national indicators, particularly those for acute services, included fixed national target levels (or defined ranges), thereby linking payments to achievement. However, for certain indicators, especially within PSS CQUIN schemes, performance targets remained subject to local agreement or adaptation.^{242, 250} In some cases, e.g. the indicator on responsiveness to personal needs of patients, schemes included separate components: one for improvement against a previous baseline and another for exceeding a national benchmark.^{267, 268}

From 2019 onwards, the incentive model focused on rewarding achievement.^{260, 265, 275, 276} Payments were determined according to performance between nationally defined lower and upper thresholds (see below). Providers could only earn payment if they exceeded the lower threshold, with full payment made upon reaching or surpassing the upper threshold.

INDICATOR WEIGHTS, PERFORMANCE SCORE AND PAYMENTS

In 2023, each CQUIN indicator carried equal financial weight within the provider's scheme.^{265, 277} This equal weighting had not always been standard practice; in earlier periods, some goals were assigned greater financial weight than others based on local or national priorities or required effort (more financial weight for more effort).^{239, 258} Specifically for PSS CQUIN between 2016 and 2020, a cost-based scheme-specific algorithm was used to determine the appropriate payment proportion for each CQUIN scheme. These algorithms were designed to ensure that payments covered typical implementation costs (adjusted for anticipated savings) while including an additional financial margin to incentivise participation.^{250, 264, 273} In 2016, this margin was set at 25%, rising to 50% in 2017.^{242, 273}

From 2019 onwards, payments were determined based on where the provider's performance fell within a defined range between a lower and upper threshold. For most indicators, a provider's performance score was calculated as the average of quarterly performance values (see Table 17).^{265, 277} In some cases, performance was assessed as the average over the entire measurement period. The upper threshold represented the target performance level at which full payment for that indicator (i.e. the amount withheld) was awarded, while the lower threshold marked the point at which partial payment began. Performance below the lower threshold yielded no payment. A linear formula was used to determine the proportion of the payment earned as follows:^{265, 277}

$$Proportion\ earned = \begin{cases} 0 & \text{if } Performance < Lower \\ \frac{(Performance - Lower)}{(Upper - Lower)} & \text{if } Lower < Performance < Upper \\ 1 & \text{if } Performance > Upper \end{cases}$$

This proportion was then multiplied by the financial amount attached to the indicator for that provider to determine the actual payment.

While the evidence base for indicator selection is typically referenced in the indicator specifications, the rationale behind the choice of performance thresholds is less explicitly documented. Some CQUIN guidance documents suggest that expert input may have informed the selection of performance thresholds. The 2020 guidance further notes that lower and upper thresholds were set to ensure that CQUIN funding was fully attainable, building on current levels of adoption and acknowledging existing variation across providers.²⁷⁶

^j For the indicator 'Prompt switching of intravenous to oral antimicrobial treatment', a lower score indicates better performance. In this case, the inequality signs in the formula are reversed to ensure correct payment calculation.

Earlier iterations of the CQUIN programme used a range of payment structures, including all-or-nothing models, in-year milestones that triggered interim payments, and tiered or stepwise approaches.^{239, 250, 258} An example of the latter is the NHS Safety Thermometer in 2013, which applied a graduated payment model based on percentage achievement tiers.²⁶⁶ Similarly, many PSS CQUIN schemes used a Red-Amber-Green (RAG) system, awarding 100% payment for performance above 95%, 50% for 80-94%, and 0% for performance below 80%.^{264, 272}

2.4.3.3 *Hospital participation*

In 2023, participation in the CQUIN programme was mandatory for NHS Trusts and Foundation Trusts with an Estimated Annual Contract Value (EACV) exceeding £10 million.^{265, 278} As outlined above, non-achievement or non-pursuit of CQUIN targets resulted in a reduction in the provider's API payments. For contracts with a lower EACV or those outside the API payment system, participation was optional.

2.4.3.4 *Evaluation strategy*

Prior to programme implementation, there was an impact assessment.²⁵³ The National Institute for Health and Care Research (NIHR) funded two major evaluations, one of CQUIN (2009-2012)^{239, 258} and one of PSS CQUIN (2017-2021).^{41, 242, 250}

IMPACT ASSESSMENT

The impact assessment offered an ex ante evaluation of the expected costs, benefits, and risks of CQUIN, comparing three options: no programme, a nationally standardised scheme, and a national framework with local discretion.²⁵³ Locally developed schemes were expected to be more effective by aligning with local goals and needs, generation of local enthusiasm and avoiding the perception of being externally imposed. It was uncertain which option would be more costly.

Risks were generally assessed as lower for locally developed schemes. Locally negotiated schemes were considered more likely to generate clinician engagement and provider ownership, thereby reducing the risk of disengagement. The evidence base for selecting national indicators was not seen as sufficiently robust to support a fully standardised set. A national set might also overlook important local priorities in quality and impose varying levels of challenge or ambition ('stretch') across providers. Better alignment with local priorities was expected to reduce resource diversion from unincorporated to incentivised areas, and improve cost-effectiveness. Setting a realistic level of 'stretch' was thought to reduce perceptions of inequity among providers in different starting positions, limit financial instability, and lessen the motivation for gaming. At the same time, local schemes were seen as more susceptible to information asymmetry between providers and commissioners, which could result in under-ambitious goals.

The impact assessment also emphasised the importance of robust quality data. It noted that local schemes could better account for local data limitations, but that locally selected performance indicators might impede benchmarking across providers, thereby weakening reputational impact as a driver of quality improvement. However, it was presumed that locally negotiated schemes would use existing national and regional indicator definitions where possible and introduce local indicators only as needed. Over time, this was expected to support greater standardisation and comparability.

CQUIN EVALUATION (2009-2012)

A comprehensive quantitative and qualitative evaluation of the early implementation of CQUIN assessed its strengths, operational challenges and impact on quality.^{239, 258, 259, 287}

One of the main strengths identified was CQUIN's capacity to enable local commissioners and providers to identify and prioritise heterogeneous local needs for quality improvement. In 2010-2011, 151 different schemes were implemented across acute care providers, with 92 distinct goals operationalised in 1 546 unique indicators. This level of variation was considered unlikely under a



centrally mandated approach. As the financial value of CQUIN increased, the scheme also received greater attention across provider organisations.

The evaluation assessed CQUIN's impact on provider performance, though self-selection of goals through local negotiation complicated analysis due to endogeneity. Using a difference-in-differences methodology, nine indicators of the 2010-2011 programme were examined across areas such as patient safety, elective surgery, emergency readmissions, and discharge planning. No evidence was found of performance improvement attributable to the incentivisation of an indicator in a local CQUIN scheme, except for improved return-to-home rates after hip fracture.

Several barriers to improvement were identified:^{239, 258}

- Limited clinical engagement: A lack of clear mechanisms to involve clinicians meant that many schemes were developed without input from frontline clinicians, leading to dissatisfaction with the development process. Annual renegotiation and review of schemes and goals left insufficient time for engagement and hindered long-term investments as well as the embedding of behavioural change, i.e. sustaining practice changes and preventing reversion to pre-CQUIN behaviours.
- Complexity of schemes: Local flexibility resulted in complex schemes. In acute care, schemes had a median of 11 goals (range: 2 to 25) and 16 indicators (range: 3 to 52).
- Lack of standardisation: Anticipated bottom-up convergence around standardised indicators did not occur. In acute care schemes, only 12% of indicators were nationally defined, 31% regionally defined, and 57% locally developed. Many of these locally developed indicators lacked clarity and precision, complicating performance monitoring.
- Limited adherence to guidance:²⁶⁹ Although the 2009 national guidance advised schemes to include indicators across four quality domains, most schemes failed to comply. The guidance also emphasised the use of outcome measures, yet only 34% of indicators were outcome-based, 62% related to processes or structures, 5% to action plans, and 2% to data collection. Moreover, just 19% of structure or process indicators were reported as evidence-based. Finally, there was variation in how commissioners applied the payment rules: while some enforced them strictly, others exercised discretion by considering mitigating circumstances.
- Lack of benchmarking: Due to the reliance on locally defined indicators, opportunities for benchmarking between providers were limited, even when schemes targeted similar goals.
- Data availability and burden: In 2010-2011, it was not allowed to reward data collection for newly introduced indicators. This guidance was reversed in 2011-2012 after drawing widespread criticism as data collection was seen as necessary first step to quality improvement in areas where baseline data were not routinely available. In 45% of cases, baseline values were marked 'to be confirmed' and in 24% as 'not available'. Additionally, the monitoring and reporting workload was described as substantial.
- Perception as financial risk: Although boards paid increasing attention to CQUIN, discussions often focused on financial implications rather than quality or innovation. Stakeholders cited the perception of financial risk as a reason for the limited inclusion of innovation-related goals, which require risk-taking and experimentation.

The evaluation highlighted several key recommendations, including:

- A clearer division of responsibilities. Local actors should be involved in selecting goals aligned with local priorities, while the technical design process including indicator design, setting threshold and reward levels, should be centrally managed as it requires specific expertise on costs, implementation, evidence-based knowledge, etc. Hence, a firmer national framework with a pick-list of indicators was recommended to balance local relevance with comparability.
- A smaller set of indicators focused on high-impact changes was preferred to reduce complexity and support benchmarking.

- Greater clinician involvement, shifting from being informed to taking part in scheme development.
- Avoiding all-or-nothing payment models, which were seen as demotivating and even counterproductive when targets were viewed as unachievable.

PSS CQUIN EVALUATION (2016-2019)

A quantitative and qualitative evaluation of the PSS CQUIN programme assessed its design, operational challenges, and impact on quality.^{242, 250} Building on lessons from the earlier CQUIN evaluation, the technical development of PSS CQUIN schemes was centrally managed, while scheme selection and performance targets were negotiated locally (see sections 2.4.3.1 and 2.1.3.4). This local flexibility and adaptability were valued by providers. Most schemes included tiered payment structures, sometimes with multi-year duration and defined exit plans, aiming to mitigate financial risk and support continuity.

The evaluation assessed PSS CQUIN's impact on provider performance, though as before potential self-selection of providers into specific schemes complicated analysis. Using a difference-in-differences approach with propensity score matching, 24 outcomes were examined across 10 schemes in acute and mental health specialised services between 2016-2017 and 2017-2019 (from a total of 35 schemes). The schemes were selected for strategic importance and data availability, and included schemes in trauma care, neonatal care, cancer, coronary bypass grafting, appropriate care use in general. There was limited overall impact on care quality. Three outcomes showed statistically significant results, one improving and two deteriorating. The positive result concerned a 7% increase in timely discharge from adult critical care for trauma patients, though the effect was not sustained after the scheme ended and may have reflected gaming rather than actual improvement. The two negative effects were increased emergency admissions among renal patients after incentivising patient activation interventions, and longer neonatal stays after efforts to improve community nursing support, both contrary to the schemes' intended outcomes.

Two schemes were also analysed for their effects on socioeconomic inequalities using the area multiple deprivation index of the patient.⁴¹ In the trauma care scheme, improvements disproportionately benefited patients from less deprived areas, widening inequalities. No differential effects were found in the coronary bypass scheme.

Several barriers to quality improvement were identified:

- Complexity of design: The PSS CQUIN programme was highly complex, with each scheme having a unique design. In some cases, different incentive structures were applied to different providers within the same scheme, for example based on contract value. Accommodating this complexity added considerable burden when implementing the programme. Providers noted that long, unclear documentation, limited communication, and ambitious targets made expectations difficult to interpret.
- Strict timelines: Schemes operated under tight schedules, with frequent payments tied to trigger-based targets. Even for multi-year schemes, incentivised outcomes often changed each year. This limited time for planning and implementation of improvements and reduced the opportunity for providers to catch up if targets were missed in earlier periods.
- Limited justification for measures: Most schemes incentivised process measures, and to a lesser extent structure indicators, but supporting documentation often lacked justification for indicator selection or evidence linking them to outcome improvements.
- Insufficient incentive strength: Although payments were calculated to cover average costs plus a margin, this did not always reflect providers' marginal costs, particularly in settings with staff and capacity constraints or additional implementation and negotiation costs.
- Weak exit strategies: Exit plans to maintain improvements after financial incentives ended were insufficiently developed.



REFORM IN 2019

The major reform introduced in 2019 (see sections 2.4.3.1 and 2.4.3.2) was presented as a response to criticisms of earlier CQUIN schemes. In the 2019 guidance (p. 3), NHSE stated that *'in past schemes CQUIN has attracted criticism for requiring significant cost to implement due to the inclusion of new or complex goals, setting outcome-based targets which impose unfairly distributed burden on providers, or require action which is outside the control of a single organisation.'*²⁷⁵ The stated objective of the reform was to reduce complexity and administrative burden and to accelerate the uptake of clearly defined, evidence-based practices already being rolled out nationally, thereby avoiding additional implementation costs or providing a way to finance these and highlight the benefits of the supported interventions.^{275, 288}

PAUSE IN 2024

NHS England's explicit rationale for pausing the nationally mandated CQUIN scheme in 2024 is that it wanted incentive schemes to be *'proportionate and effective'* and to pause CQUIN *'while a wider review of incentives for quality is undertaken.'*²⁸⁹ The pause was also reported to reflect feedback that, in some systems, the financial element was not being strictly applied, with ICBs and providers addressing quality shortfalls collaboratively rather than through financial clawback.²⁹⁰ Sector commentary further highlighted concerns that the administrative burden of CQUIN was disproportionate to its relatively small financial value.²⁹⁰ Subsequent feedback to NHSE indicated strong support for the pause and consistent with feedback in previous years.²⁹¹

2.4.3.5 Integration with hospital strategy

CQUIN was introduced as part of a broader ecosystem of quality improvement tools within the NHS.^{253, 256, 258} The 2024 pause of the programme was similarly framed within a wider review of existing quality initiatives and incentive mechanisms.²⁸⁹

FINANCIAL AND NON-FINANCIAL INCENTIVES OPERATING IN PARALLEL

Several quality improvement mechanisms operated alongside CQUIN, including:

- Pay-for-performance initiatives, such as Best Practice Tariffs (BPTs) and the original non-payment policy for 'never events' (later converted into a non-financial initiative). Commissioners were instructed not to duplicate BPT incentives within CQUIN. As discussed in section 2.5, BPTs had a very different programme design. In addition, the CQUIN evaluation found that staff involved in scheme negotiation were often unfamiliar with other concurrent financial incentives such as BPTs.²⁵⁸
- Patient safety reporting initiatives (non-financial), including the Patient Safety Incident Response Framework and the Never Events Policy Framework.^{292, 293}
- Regulatory inspection systems, such as the Care Quality Commission (CQC), the independent regulator responsible for safeguarding fundamental quality and safety standards, with the authority to impose fines.^{253, 256, 278, 294}
- Public performance reporting, such as the current NHSE Data Dashboard which enables transparency, benchmarking and league tables within the NHS Performance Oversight Framework.
- Other quality improvement mechanisms within the NHS Standard Contract.²⁷⁸ Service Development and Improvement Plan (SDIP) are locally agreed contractual mechanisms to support service development (service redesign, quality improvement) beyond the currently agreed standard and not covered by a formal quality incentive scheme. Data Quality Improvement Plans (DQIPs) are optional, locally agreed plans aimed at improving the capture, quality and flow of data to strengthen reporting, performance monitoring and commissioning processes.

REINFORCING FINANCIAL AND NON-FINANCIAL INCENTIVES

Several mechanisms were complementary to CQUIN and contributed to reinforcing shared quality objectives:

- Initiatives to define and measure quality through indicators (e.g. the quality measurement framework).^{253, 257} In later years, CQUIN indicator development increasingly drew on evidence-based standards, such as NICE guidelines and quality standards.²⁹⁵
- Regional pay-for-performance schemes, such as Advancing Quality (AQ) in NHS North West region, which was integrated within CQUIN, but included additional mechanisms (e.g. best practice sharing, longer-term indicators).²⁵⁸
- The now-discontinued Quality Premium scheme (introduced in 2013) provided financial incentives at the commissioning level, rewarding CCGs for improvements in population health.^{240, 259, 261} Several of its objectives were closely aligned with CQUIN targets at the provider level.
- Public reporting, such as quality accounts (see section 2.1.3.7).
- Strategic planning, including long-term visions, reviews and policy priorities that influenced CQUIN goal setting.²⁷⁴
- National and Local Quality Requirements, which form part of the NHS Standard Contract and define minimum quality standards.^{278, 296} Over time, several CQUIN indicators transitioned into National Quality Requirements once sustained performance had been achieved. Local Quality Requirements, by contrast, are defined through local agreement.

2.4.3.6 Stakeholder involvement

STAKEHOLDER CONSULTATION

NHS England has established mechanisms for consultation and stakeholder engagement on national guidance, contracts, and operating frameworks, which can inform revisions to programmes such as CQUIN. As CQUIN was embedded within the NHS Standard Contract and guided by annual updates, it has been subject to stakeholder input. While detailed consultation processes are not always fully documented in the public domain, some examples were published.^{269, 297} For instance, the Summary Response to the Engagement Exercise for CCG CQUIN 2017–2019 outlines how feedback from commissioners and providers led to adjustments in indicator specifications, target thresholds, and timing.²⁹⁷ As discussed in section 2.4.3.4, such consultation contributed to subsequent reforms and the decision to pause the programme in 2024.

INPUT FROM CLINICIANS AND FRONTLINE STAFF

Initial CQUIN guidance highlighted the importance of involving clinicians and frontline staff in scheme development, including the selection of clinically meaningful indicators. However, evaluations found that mechanisms for meaningful engagement were lacking and that limited timeframes further constrained participation, leading to dissatisfaction with the development process.

Informed by these findings, PSS CQUIN schemes were developed drawing on clinical expertise from National Clinical Reference Groups (CRGs), i.e. expert advisory bodies that include clinicians, commissioners, patients, and carers.^{264, 273}

CQUIN guidance in 2019 and 2020 noted that national indicators were developed with input from the National CQUIN Advisory Group (and later the National Design Group), which brings together clinical leaders and stakeholders.^{275, 276}



COMMISSIONING

CQUIN schemes were negotiated between commissioners and providers. Stakeholders indicated that this process occasionally strengthened working relationships. However, structural reforms to commissioning bodies over time may have impacted the stability and effectiveness of this process.²⁵⁸

2.4.3.7 *Methods used for transparency and accountability*

PERFORMANCE REPORTING

Since 2022-2023, providers have been required to collect and report data to the relevant national bodies on all national CQUIN indicators relevant to the services they deliver, regardless of whether those indicators were included in their own CQUIN scheme.^{265, 286} While financial incentives have been limited to a subset of up to five indicators per provider (see section 2.4.3.1), data reporting obligations extended more broadly.

In addition, providers were required to submit a monthly CQUIN Performance Report to the (co-ordinating) commissioner.^{278, 294} These reports detailed performance on the indicators included in their scheme, supported by clinical or other relevant evidence. Commissioners were entitled to review and, if necessary, challenge the submitted information.

NHS providers above a defined economic threshold are also legally required to produce annual Quality Accounts. These published reports describe the quality of services and ongoing improvement efforts, analogous to financial accounts. CQUIN performance had to be reported within these publications. This can be seen as weak public reporting, with limited potential for comparison across providers.²⁹⁸

FEEDBACK TO HOSPITALS

From 2022-2023, providers received information about both their absolute and relative performance on each CQUIN indicator based on the collected data.^{265, 286}

2.5 Best Practice Tariffs in England

2.5.1 Brief overview of the financing methods for acute hospitals

HOW HOSPITAL SERVICES ARE COMMISSIONED AND ORGANISED IN ENGLAND

England has a National Health Service (NHS) funded primarily through general taxation. The NHS budget is allocated to local commissioning bodies using a weighted capitation formula, which takes account of population size, demographic characteristics, levels of deprivation, and health needs. These local bodies are responsible for planning and purchasing healthcare services for their populations.²⁹⁹

Historically, these commissioning functions were carried out by Primary Care Trusts (PCTs) until 2013. Following reforms under the Health and Social Care Act 2012, PCTs were abolished and replaced by Clinical Commissioning Groups (CCGs), which operated between 2013 and 2022 and were led mainly by GPs.³⁰⁰

In July 2022, CCGs were abolished under the Health and Care Act 2022 and replaced by Integrated Care Boards (ICBs).³⁰¹ ICBs are statutory NHS bodies responsible for planning and commissioning most healthcare services and for managing NHS budgets at system level. However, they operate within broader Integrated Care Systems (ICSs), which are place-based partnerships that bring together NHS providers, local authorities, and other organisations to coordinate health and care delivery. While ICSs provide the strategic and collaborative framework for integration, ICBs hold the formal commissioning and financial responsibilities within these systems.

NHS HOSPITAL FINANCING: INTRODUCTION OF PAYMENT BY RESULTS

In 2003/2004, a new financing system for hospitals was introduced in the NHS in England called Payment by Results (PbR).²⁴⁹ This system marked a major shift away from block contracts and historical budgets towards a national, activity-based model in which hospitals are paid according to the care they deliver. Under PbR, funding follows the patient, meaning providers are reimbursed based on the number and type of cases treated rather than fixed annual allocations.

The system is built around two core elements: nationally determined currencies and tariffs. Currencies (defined as Health Resource Groups or HRGs – the English version of Diagnosis Related Groups (DRGs)) represent the unit of healthcare for which payment is made. These can vary in scope, ranging from a single outpatient visit, an inpatient episode, or a full hospital stay, to an annual package of care for patients with long-term conditions. Tariffs, in turn, are the standardised prices assigned to each currency.

Tariffs are set nationally and are based on the average cost of providing treatment across NHS providers. Tariffs depend on whether a spell of care is elective or non-elective in order to reflect differences in resource use and cost. In many cases, there is a single price for elective care, including both day-case and inpatient treatment, regardless of where the service is delivered. This standardisation was designed to promote fairness and efficiency across providers.

When PbR was first introduced in 2003/2004, a national tariff applied to only 15 HRGs, covering a limited number of elective procedures. In subsequent years, the system was gradually expanded to include a much wider range of HRGs and types of care, including non-elective admissions, outpatient services, and more complex clinical pathways. This expansion significantly increased the proportion of NHS activity funded through activity-based payment.

TRANSITION TO THE NHS PAYMENT SCHEME

Over time, PbR was progressively refined and expanded, but in 2014 it was formally restructured into the National Tariff Payment System (NTPS).³⁰² The NTPS retained the core principles of PbR, including the use of HRGs as currencies and nationally determined tariffs, while introducing a more



structured and regulated approach to pricing, with stronger oversight and a greater emphasis on efficiency and cost control.

Although the NTPS preserved the activity-based foundations of PbR, it also began to incorporate more flexible payment approaches. From the late 2010s onwards, NHS policy increasingly focused on system-wide planning, collaboration, and integrated care rather than competition between organisations. A key development during this transitional period was the introduction of the Aligned Payment and Incentive (API) model (see further), which combines fixed and variable elements of funding in order to reduce reliance on pure activity-based reimbursement.³⁰³ At the same time, the use of block contracts increased significantly, particularly during and after the COVID-19 pandemic, further accelerating the move away from strict per-episode payment mechanisms.

These reforms led to the replacement of the NTPS by the NHS Payment Scheme (NHSPS) on 1 April 2023.³⁰⁴ Introduced under the Health and Care Act 2022,³⁰¹ the NHSPS represents the current framework for NHS provider payments in England and was designed to modernise payment mechanisms so that they better support integrated care and population-based planning. Unlike earlier tariff systems, which were centred largely on a single national pricing model, the NHSPS offers greater flexibility through a range of payment mechanisms depending on provider type, contract size, and service characteristics.

ALIGNED PAYMENT AND INCENTIVE (API)

The Aligned Payment and Incentive (API) approach is the main payment mechanism used across the NHS Payment Scheme and applies to almost all services delivered by NHS providers that fall within its scope.³⁰⁵ This includes secondary care services such as acute hospital care, maternity, community health services, mental health services, and ambulance provision. API is therefore designed to cover the majority of core NHS-funded provider activity through a blended payment model combining fixed and variable elements.³⁰³

The **fixed element** represents the agreed baseline funding paid to providers for a defined period, usually a financial year. It is set using clinical expertise, financial and operational data, and system priorities to reflect efficient costs while supporting safe, high-quality care aligned with population needs.³⁰³ It typically covers most non-elective activity, including maternity, mental health, community, and ambulance services, while elective care is mainly funded through the variable element. Although national uplift and efficiency assumptions provide a baseline, local factors such as demand changes, inflation, and resource constraints may be taken into account. Overall, the fixed element is designed to provide stable funding while remaining responsive to evolving system needs.

The **variable element** works alongside the fixed payment to support specific system objectives by adjusting funding based on activity against an agreed baseline. While the fixed element funds a planned level of activity, the variable element redistributes funding depending on whether providers exceed or fall short of that baseline, as well as their performance on quality measures (via attainment of Best Practice Tariffs (BPTs) and CQUIN (see section 2.4)).

OTHER PAYMENT MECHANISMS

Low volume activity (LVA) block payments are used when the annual value of activity between commissioner and provider is relatively small. This will normally be those with an expected value of annual activity of £ 1.5m or less.³⁰⁵ LVA only applies to relationships between NHS Trusts and ICBs, it does not apply to independent sector providers, or to relationships with other commissioners such as local authorities. Instead of billing every episode of care, the commissioner pays a nationally set block amount, usually based on historic averages, thus providing a simpler funding model for smaller volumes of care. This reduces transaction costs.

Under activity-based payments, providers are reimbursed for each episode or unit of care delivered using nationally set prices, similar to the former tariff-based payment system. It is used primarily for non-NHS providers, such as independent sector organisations delivering NHS-funded services. As

payment is directly linked to activity levels, providers receive more income when they deliver more care.

Where national mechanisms are unsuitable, commissioners and providers can negotiate local payment models. This is often used for innovative, niche, or difficult-to-price services.

2.5.2 Objectives and rationale of the programme

The first mention of the concept of Best Practice Tariffs (BPTs) appears in the report High Quality Care for All – NHS Next Stage Review Final Report (2008), led by Lord Darzi. BPTs are designed and priced to incentivise care that delivers both high-quality outcomes and value for money.²⁵⁶ They represent a shift away from the traditional approach of basing tariffs on national average reference costs.³⁰⁶

Unlike standard tariffs set at the average cost of care, these payments are aligned with the cost of delivering evidence-based best practice – which may be either higher or lower than the national average. For instance, if best practice for a procedure involves treating a patient as a day case instead of admitting them overnight, the cost is typically lower than the national average, which includes more inpatient care. Conversely, best practice may require additional treatment steps, advanced technology, or higher-cost medications. In such cases, the tariff would exceed the national average to reflect the higher cost of optimal care. For other BPTs, the tariff is an incentive for following best practice and is not necessarily aligned with the cost of delivering the best practice.

The High Quality Care for All report motivated the introduction of BPTs and the selection of the first BPTs as follows: 'To support local efforts to address unexplained variation in quality and universalise best practice, we will start to pay prices that reflect the cost of best practice rather than average cost. This will be enabled through the Best Practice Tariffs programme, which we will introduce where the evidence of what is best practice is clear and compelling. We will start in 2010/11 with four high-volume areas where there is significant unexplained variation in practice: cataracts, fractured neck of femur, cholecystectomy, and stroke care.'²⁵⁶

Hence the service areas included under BPTs are chosen based on the following criteria:

- high impact, such as high patient volumes, large variation in practice, or significant effects on outcomes;
- a robust evidence base defining what constitutes best practice; and
- clinical agreement on the defining features of best practice.

Although many BPTs share similar objectives such as avoiding unnecessary admissions and delivering care in appropriate settings, each BPT is developed using a tailored approach that reflects the clinical requirements of best practice and considers the availability and reliability of relevant data.³⁰⁷ BPTs encourage a shift from standard care to best practice by establishing a price difference between the agreed-upon best practice and routine care.

BPTs emerged from the commitment to place quality at the centre of the NHS while simultaneously promoting efficiency and value in healthcare delivery. They were designed to support improvements in both quality and efficiency through aligned financial incentives.³⁰⁸

2.5.3 Design

2.5.3.1 Indicator design

PRICING PRINCIPLES OF BPTs INTRODUCED IN 2010-2011

When first introduced, BPTs were set not at the national average cost, but at levels that reflect the true cost of delivering best-practice care. In the early phase, additional financial incentives were built into the tariffs to encourage adoption, with the intention of phasing these out over time as practice



aligns with evidence. Importantly, incentives do not simply involve paying more. For instance, the cataract tariff excluded payment for pathway elements that fall outside best practice, and the cholecystectomy tariff reduced the overall budget by assuming higher day-case rates. Similarly, the cost of CT scans for stroke was separated so providers only received payment when scans follow best practice.³⁰⁸

A key principle was that commissioners should not pay more for providers who do not improve. For pathways such as stroke and hip fracture, the base tariff was set below the national average cost, ensuring no commissioner paid more for current performance. Providers delivering below-average care therefore faced a stronger financial incentive to improve for patients' benefit.

For 2010/11, three distinct models were developed to target quality and value in four service areas:

- Model 1: 'streamlined pathway' for cataract treatment
- Model 2: 'incentivising day-case activity' for cholecystectomy (gall bladder removal)
- Model 3: 'paying for best practice' for stroke and fragility hip fracture care.²⁴⁹

The 'streamlined pathway' BPT for cataracts was designed to incentivise efficient, high-quality cataract care through a simplified care pathway aligned with Royal College of Ophthalmologists guidelines. Rather than reimbursing each step separately, the tariff covered the entire elective cataract pathway including outpatient assessment, pre-operative evaluation, surgery and follow-up through a bundled payment structure. The model aimed to reduce unnecessary appointments, improve patient experience, and encourage cost-effective delivery of cataract surgery, typically on a day-case basis.³⁰⁸

The BPT for elective cholecystectomy was designed to encourage a shift toward laparoscopic day-case surgery, where clinically appropriate. There was substantial variation in practice across England, with a national day-case rate of around 19%, despite evidence suggesting that up to 60% of patients could be treated this way in suitable cases. The tariff therefore introduced financial incentives to increase day-case rates, recognising that high-performing hospitals were already achieving this level. The payment structure set higher tariffs for day cases relative to ordinary elective admissions, while keeping overall costs neutral for commissioners. The design was intended as a transitional incentive to change clinical practice, with the expectation that pricing would later be adjusted once higher day-case rates became the norm.³⁰⁸

The BPT for stroke care was designed to improve outcomes by promoting rapid, specialist-led treatment in dedicated acute stroke units. Evidence shows that patient outcomes are significantly better when patients are admitted directly to a stroke unit, where multidisciplinary teams can provide immediate assessment, coordinated care, and early rehabilitation. Key components of best practice include rapid brain imaging to determine stroke type and guide treatment decisions, as well as timely access to specialist stroke expertise and, where appropriate, thrombolysis. The tariff incentivises adherence to these elements of care by combining a base payment with additional top-ups linked to specific practices. An extra payment was made when patients are admitted directly to an acute stroke unit and receive high-quality specialist care for most of their hospital stay. A further payment applied when brain imaging is delivered promptly according to clinical guidelines. Overall, the structure was designed to encourage compliance with national stroke guidelines and improve the speed, coordination, and quality of acute stroke care, without relying solely on a single bundled tariff.³⁰⁸

EXPANSION OF BEST PRACTICE TARIFF POLICY

Table 20 provides an overview of all BPTs introduced since their launch in 2010/11. This summary offers a comprehensive view of the evolution of the BPT programme over time and highlights both the expansion into new clinical areas and the phasing out of specific tariffs as policy priorities and evidence have developed. The overview is based on the 'Guidance on Best Practice Tariffs' issued since the introduction of BPTs in 2010. Some BPTs relate to efficiency measures and optimal care settings, while others concern outpatient care pathways; both categories fall outside the scope of this report. The results for 2026/27 can be found in Table 21.

Table 20 – Best Practice Tariffs (2010-2027)

<i>Best Practice Tariffs (BPTs)</i>	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2025	2025-2026
<i>Fragility hip (and femur) fracture</i>	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Cholecystectomy (part of day case procedures since 2011/12)</i>	x	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Acute stroke care</i>	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Cataracts</i>	x	x	x	x	x	-	-	-	-	-	-	-	-	-
<i>Adult renal dialysis</i>		x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Day case procedures</i>		x	x	x	x	x	x	x	x	x	-	-	-	-
<i>Interventional radiology</i>		x	x	x	x	x	x	-	-	-	-	-	-	-
<i>Paediatric diabetes</i>		x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Primary total hip and knee replacement (outcomes)</i>		x	x	x	x	x	x	x	x	x	x	x	x	x
<i>Transient ischaemic attack</i>		x	x	x	x	x	x	x	x	x	x	x	-	-
<i>Outpatient procedures</i>			x	x	x	x	x	x	x	x	-	-	-	-
<i>Same day emergency care</i>			x	x	x	x	x	x	-	-	-	-	-	-
<i>Major trauma</i>			x	x	x	x	x	x	x	x	x	x	x	x
<i>Diabetic ketoacidosis and hypoglycaemia</i>				x	x	x	x	x	x	x	x	x	x	x
<i>Early inflammatory arthritis</i>				x	x	x	x	x	x	x	x	x	x	x
<i>Endoscopy procedures</i>				x	x	x	x	x	x	x	x	x	x	x
<i>Paediatric epilepsy</i>				x	x	x	x	x	x	x	x	x	x	x
<i>Parkinson's disease</i>				x	x	x	x	x	x	x	x	x	x	x
<i>Pleural effusion</i>				x	x	x	x	x	x	x	x	x	x	x
<i>Heart failure</i>							x	x	x	x	x	x	x	x
<i>Non-ST segment elevation myocardial infarction (NSTEMI)</i>							x	x	x	x	x	x	x	x
<i>Chronic obstructive pulmonary disease (COPD)</i>								x	x	x	x	x	x	x
<i>Emergency laparotomy</i>									x	x	x	x	x	x



Best Practice Tariffs (BPTs)	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2025	2025-2026
<i>Spinal surgery</i>									x	x	x	x	x	x
<i>Rapid colorectal diagnostic pathway</i>									x	x	x	x	x	x
<i>Referral of appropriate post-myocardial infarction (STEMI) patients to cardiac rehabilitation</i>									x	x	x	x	x	x
<i>Adult asthma – aged 19 and over</i>										x	x	x	x	x
<i>Right Procedure Right Place (RPRP) BPT</i>														x

Note: grey = BPT focusing on quality; orange = BPT focusing on efficiency (optimal care setting); red = BPT focusing on outpatient care

Sources: National Tariff Payment System and Guidance on best practice tariffs (2010/11 – 2026/27) ^{302, 308-318}

A table showing only which BPTs were in place in each year is insufficient because it fails to capture the substantial changes made over time to individual BPTs, including revisions to eligibility criteria, payment values, coding rules, performance requirements, and the payment mechanisms through which they were delivered. Over time, many BPTs underwent significant reforms that went well beyond simple introduction or removal. For example, some tariffs that initially operated as fixed uplifts per episode were later incorporated into blended payment models under the API system, shifting them from purely activity-based payments to components of a broader fixed and variable funding structure. In other cases, eligibility criteria were tightened or refined as clinical guidance evolved, such as through stricter time-to-treatment thresholds or additional requirements for multidisciplinary team involvement. Payment values were also regularly updated to reflect national tariff revisions and efficiency assumptions, while coding rules were amended to improve data capture in NHS data systems. In addition, some BPTs were split or merged, such as separating elective and emergency pathways.

These examples show that BPTs were adapted in response to emerging evidence, improvements in coding and data availability, and wider reforms to NHS payment systems, including the transition towards blended payment models.

To illustrate how BPTs have evolved since their introduction in 2010/11, several concrete examples are presented below, as it is not feasible to provide a full description of every BPT introduced over this period.

SOME EXAMPLES

Fragility hip fracture BPT

The first BPTs were created as simple per-case tariff uplifts for delivering evidence-based care pathways. Each time a hospital treated an eligible patient and met the required best practice criteria, it received an additional payment on top of the standard tariff for that patient episode. Payment therefore depended directly on the number of qualifying patients treated during the year. The more eligible cases achieved, the more BPT income the provider received.

An example is the fragility hip fracture BPT, which is one of the longest-standing and most developed NHS BPT. Introduced in 2010/11, it was designed to improve outcomes for older patients with hip fracture by linking payment to evidence-based standards of care. The BPT was developed to encourage prompt surgery and appropriate involvement of geriatric medicine. The BPT consisted of a base tariff, with an additional payment if six clinical characteristics of best practice were met, including timely surgery, orthogeriatric involvement and reporting in the National Hip Fracture Database.³¹⁹ The additional payment reflects the estimated costs associated with achieving best-practice criteria.³⁰⁸

In subsequent years, the financial gap between the base tariff and the BPT top-up widened, reinforcing incentives for compliance, while best-practice criteria were also expanded.³¹⁰ In 2017/19, there was a major redesign of criteria, with earlier process measures relating to admission protocols and teamworking being replaced with more patient-centred indicators. Three previous measures were removed and three new measures were introduced, including greater focus on delirium/cognitive screening, nutritional assessment, and physiotherapy review.³²⁰

In 2020/21, the scope expanded beyond hip fracture to include distal femur and other femoral fragility fractures. The BPT was renamed the 'fragility hip and femur fracture' BPT.³¹⁵ Between 2021/22 and 2024/25, the BPT has continued to operate under the National Tariff/NHS Payment Scheme, with annual updates to prices and technical adjustments.

From the year of introduction until 2023/25, the BPT worked as a per-case financial incentive. In 2025, the expected value of the hip fracture BPT became part of the provider's annual funding allocation through fixed payment mechanisms within the broader API framework. In practice, hospitals received an agreed amount of funding linked to hip fracture best practice as part of their yearly financial settlement, rather than earning a separate top-up payment for each individual patient treated. Although the payment method changed, the clinical standards of the BPT still matter. Providers are still expected



to deliver best practice care and performance may still be monitored through audit data, reporting requirements, or contractual oversight.³¹⁸ From 2026/27, the BPT has returned to being transacted on an activity basis.

From its introduction in 2010/11, the hip fracture BPT progressively evolved from a model centred mainly on timely surgery to one rewarding the delivery of a comprehensive multidisciplinary care pathway covering admission, perioperative management, rehabilitation, and secondary prevention.

Primary hip and knee replacement outcomes BPT

The BPT for primary hip and knee replacements was first introduced in 2011/12.³⁰⁹ It was designed to incentivise adherence to evidence-based clinical pathways across the full patient journey, from pre-operative assessment through surgery and post-discharge rehabilitation. These pathways emphasise four key elements: structured pre-operative planning, standardised peri-operative and post-operative care (including pain management), early mobilisation with safe discharge, and organised post-discharge support and rehabilitation. Together, these components were expected to improve patient experience and outcomes, while reducing length of stay and accelerating recovery.

In the initial design, incentives were set using the conventional tariff adjusted downwards by an estimate of potential efficiency savings linked to reduced length of stay, reflecting the assumption that optimised pathways are less resource intensive. This approach aimed to encourage improved practice without adding administrative complexity. The model was also supported by outcome monitoring mechanisms. Patient-reported outcome measures (PROMs) were introduced to capture patient perspectives on recovery and treatment effectiveness, alongside standard indicators such as mortality, complications, and readmissions. Participation in the National Joint Registry was also encouraged to support quality monitoring in hip and knee surgery. Overall, the design combined financial incentives for efficient care pathways with increasing emphasis on outcome measurement, with the longer-term intention of more closely linking tariffs to both best practice processes and clinical outcomes.

From 2014/15, the BPT was significantly reformed and evolved into what is now known as the 'primary hip and knee replacement outcomes' BPT.³⁰² This marked a clear shift in policy intent, moving away from rewarding adherence to care processes and towards incentivising patient outcomes and data quality. Its main objective was to reduce unexplained variation in surgical outcomes across providers by incentivising more consistent delivery of effective, high-quality care. Outcomes are measured using case-mix-adjusted Oxford hip and knee scores derived from PROMs, with providers expected not to fall significantly below the national average health gain. In addition, minimum standards for data reporting must be met, including PROMs participation, National Joint Registry (NJR) compliance, and acceptable consent rates (the proportion of patients who agree to have their personal and clinical data included in the registry for monitoring and quality improvement purposes).

Providers that fail to meet these thresholds received a reduced tariff (10% below the best practice level). The design relies on established national datasets and aims to improve both data quality and outcome measurement, with the expectation that performance thresholds will become more demanding over time. Overall, the approach marks a transition towards outcome-based payment, using PROMs and registry data to support quality improvement and reduce variation in care.

By 2015/16, compliance thresholds were tightened under different tariff options, with National Joint Registry compliance and consent requirements increased, reflecting concerns about variability in reporting quality and the need for more reliable outcome measurement.³¹² This strengthened the focus on ensuring that comparisons of surgical outcomes were based on complete and accurate datasets.

A more substantial refinement occurred in 2017/19, when the structure and criteria were formally revised.³²⁰ The revised BPT explicitly reinforced its purpose to link payment to outcomes that matter to patients and to reduce unexplained variation in reported results between providers. The updated criteria included a minimum PROMs participation rate of 50%, NJR compliance of at least 85%, and stricter thresholds for consent reporting. In addition, an additional clinical quality measure was

introduced for older patients, requiring a high proportion of cemented or hybrid prosthesis use in patients aged 70 and over, unless outcome data supported alternative approaches.

The rationale for these changes was driven by emerging evidence and national reviews such as Getting It Right First Time (<https://gettingitrightfirsttime.co.uk/>), which highlighted variation in orthopaedic practice and outcomes across England. The revisions aimed to align financial incentives more closely with evidence-based surgical practice, improve consistency of care, and ensure that reimbursement reflected both clinical effectiveness and patient-reported benefit.

In the current NHS Payment Scheme, the BPT for primary hip and knee replacement outcomes remains an elective activity BPT within the wider aligned payment and incentive (API) framework.³²¹ It continues to focus on linking payment to patient outcomes, maintaining strict data quality requirements, and supporting consistent national standards in orthopaedic care. While the structure has been refined over time, the core principles have remained stable: incentivising high-quality surgery, improving the reliability of outcome measurement, and reducing unwarranted variation in care across providers.

Major trauma

The major trauma Best Practice Tariff (BPT) was introduced in 2012/13 as part of the wider establishment of regional Major Trauma Networks and designated Major Trauma Centres (MTCs) in England. The NHS Payment by Results Guidance 2012/13 set out the new tariff arrangements, which aimed to financially support the centralisation of trauma care and incentivise treatment of severely injured patients in specialist centres. This marked a major shift from fragmented local trauma provision towards a structured, network-based model of care, with tariffs explicitly linked to where and how patients were treated.³¹⁰

The reform was strongly grounded in evidence of variation in trauma outcomes. The National Audit Office report (2010), "Major trauma care in England", highlighted inconsistent survival rates and uneven quality of care across hospitals, supporting the need for system-wide redesign.³²² In response, NHS England policy documents in 2011 formalised the creation of regional trauma networks and defined the role of MTCs as specialist centres providing 24/7 multidisciplinary trauma care. The BPT was introduced as a financial mechanism to reinforce this structural reform.

From 2012/13 onwards, the major trauma BPT provided additional payments for patients with severe injuries, particularly those with higher Injury Severity Scores (ISS), when treated in designated MTCs. Early guidance linked higher payments to more severely injured patients managed within specialist centres, while care outside MTCs received lower or no enhanced tariff. The intention was to ensure that the most complex trauma cases were consistently routed to centres with the appropriate expertise, imaging capacity, surgical teams, and rehabilitation pathways.

Between 2013/14 and 2015/16, the tariff was refined through annual updates to the PbR guidance.³⁰² During this period, NHS England progressively improved the definition of eligible patients and strengthened the link between trauma network designation and payment eligibility. These refinements also aligned the tariff more closely with data collected through the Trauma Audit and Research Network (TARN), which provided national benchmarking on mortality, outcomes, and case-mix severity across trauma centres. This ensured that payment design increasingly reflected real-world clinical outcomes and comparability across providers.

From 2016 onwards, the major trauma BPT became more stable but continued to evolve in detail through annual NHS tariff publications. Updates focused on improving data accuracy, clarifying coding rules, and strengthening the consistency of case identification. During this period, the broader Major Trauma Network model matured, with clearer expectations for MTC capability, including 24/7 consultant-led services, access to interventional radiology and neurosurgery, and structured rehabilitation pathways. These service specifications increasingly informed how the BPT operated in practice.



With the introduction of the NHS National Tariff Payment System reforms (2017 onwards) and later the API framework, the major trauma BPT was gradually embedded into a more system-oriented payment structure.

Overall, since its introduction in 2012/13, the major trauma BPT has evolved from a relatively simple add-on tariff supporting centralisation, into a stable and embedded component of England's trauma system. Its development reflects a broader trajectory in NHS payment policy: from incentivising location of care, towards supporting networked service delivery, data-driven quality improvement, and integration within system-wide payment frameworks.

IDENTIFICATION OF PRIORITY AREAS FOR NEW OR REVISED BPTs

Since 2010, the introduction, modification, and removal of BPTs has followed a broadly stable governance model, while the institutional framework and payment architecture have evolved. BPTs are developed through the national NHS payment system and are overseen by the national pricing authority, with responsibility shifting over time from the Department of Health (under Payment by Results) to Monitor/NHS Improvement and NHS England (under the National Tariff Payment System), and most recently to NHS England as the single lead body for the NHS Payment Scheme.³²³

The underlying policy objective has remained consistent: to reduce unwarranted variation and incentivise evidence-based, high-quality and efficient care. As a result, BPTs are introduced, revised, or withdrawn in response to changes in clinical evidence, policy priorities, data availability and coding capability, the effectiveness of existing incentives, and wider reforms to NHS payment models.³²¹

The first step in defining or revising a BPT is the identification of priority service areas where financial incentives may drive measurable improvement. NHS England typically selects areas with high patient volumes, significant variation in outcomes, or clear opportunities to improve efficiency and quality. In earlier years, this often focused on acute hospital services such as hip fractures, stroke care, or day-case surgery. More recently, priorities have increasingly reflected national strategic pressures, including reducing waiting lists, shifting care into ambulatory settings, and ensuring patients receive treatment in the most clinically appropriate location. This demonstrates that the selection of BPT topics is now more closely aligned with system-wide priorities than with isolated specialty concerns.³²¹

EARLY ENGAGEMENT WITH CLINICAL EXPERTS AND PROFESSIONAL BODIES

Once a priority area has been identified, NHS England engages clinical experts and professional stakeholders to determine what should constitute 'best practice'. Historically, this consultation relied heavily on hospital specialists, royal colleges, and expert clinical societies. For example, the early hip fracture tariff drew strongly on orthopaedic and geriatric expertise to establish standards such as timely surgery and orthogeriatric assessment. In recent years, however, the range of consultees has broadened considerably. Modern BPT design often includes multidisciplinary teams, operational managers, commissioners, coding specialists, and representatives from integrated care systems. This wider participation reflects the recognition that achieving best practice depends not only on clinical excellence, but also on pathway coordination, workforce capacity, digital reporting, and organisational readiness.^{324, 325}

DRAFTING MEASURABLE ELIGIBILITY CRITERIA

A further stage involves translating clinical standards into measurable payment criteria. This has become one of the most important changes in recent years. Earlier BPTs often used relatively broad definitions, rewarding providers for delivering a recognised model of care. By contrast, more recent BPTs rely on highly specific and auditable requirements. These may include treatment within defined timeframes, documented multidisciplinary review, submission of registry data, or completion of pathway milestones. For example, current emergency and elective tariffs may reward same-day treatment, rapid diagnostics, or consultant-led decision-making within set time limits. This shows a

clear movement from rewarding service configuration alone toward rewarding demonstrable performance against evidence-based indicators.^{324, 325}

FINANCIAL MODELLING AND PROVIDER IMPACT ASSESSMENT

Alongside clinical consultation, NHS England also undertakes financial modelling and operational impact assessment before finalising new BPTs. In the earlier Payment by Results era, this modelling largely concerned the value of per-case tariff uplifts and the expected effect on provider activity. Today, the exercise is more complex because BPTs sit within blended payment arrangements combining fixed and variable funding. Stakeholders are therefore consulted not only on clinical appropriateness, but also on affordability, implementation burden, coding feasibility, and the risk of unintended incentives. Hospitals may, for example, raise concerns about workforce shortages, data collection costs, or the ability of smaller providers to meet specialist standards. As a result, recent consultation processes place greater emphasis on practical deliverability than in the past.

BPTs may also be withdrawn when they are no longer needed, for example because best practice has become standard practice, a more appropriate policy mechanism has been introduced, data quality is insufficient to support reliable measurement, or the administrative burden outweighs the benefit. In most cases, removal occurs through omission or redesign within the annual NHS payment consultation process rather than through a separate formal decision-making procedure.

BPTS IN THE 2026/27 PROGRAMME

In Annex C of the NHS Payment scheme, called 'Guidance on best practice tariffs', an overview is given of the BPTs applicable in 2026/27. The document describes and gives guidance on the implementation and eligibility criteria for each BPT.³²¹

Table 21 provides an overview of the Best Practice Tariffs (BPTs) applicable in 2026/27. The overview distinguishes between BPTs primarily aimed at improving efficiency and those focused more directly on quality of care. Efficiency-focused BPTs mainly relate to the delivery of care in the most appropriate setting, such as promoting day-case rather than inpatient procedures, and are included for completeness but fall outside the main scope of this report, which focuses on quality-oriented incentives. BPTs relating to outpatient care, rather than inpatient or day-case activity, are also identified separately in the table where applicable. They also fall outside the scope of this report.

Following the structure of the Guidance, BPTs are grouped into three main categories: activity-based elective BPTs, activity-based urgent and emergency care (UEC) BPTs, and annual BPTs.³¹⁷

- Annual BPTs: the value of expected BPT achievement is included in the fixed element of the API, with annual adjustments during planning to reflect actual achievement.
- Activity BPTs – elective: BPTs linked to elective activity are paid on an activity basis through the variable element of the API or via the activity-based payment mechanism (for non-NHS providers).
- Activity BPTs – Urgent and Emergency Care (UEC): BPTs are incorporated into the UEC blended payment model. A fixed payment covers the expected level of activity for UEC services. This fixed amount is based on the standard, non-BPT tariff price. If providers treat additional activity above the agreed level, this extra activity is reimbursed at a reduced marginal rate (about 20% of the base price), reflecting efficiency incentives and discouraging unnecessary activity growth. However, if providers deliver care that meets the defined best practice criteria, they receive an additional payment equal to the difference between the base tariff and the higher BPT tariff, effectively rewarding compliance with best practice standards.³²⁴



Table 21 – Best Practice Tariffs in 2026/27

Best Practice Tariffs (BPTs)	Quality / Efficiency / Outpatient
1. Activity BPTs – elective	
Right Procedure Right Place	x
Day case	x
Endoscopy procedures	
Pleural effusion	
Primary hip and knee replacement outcomes	
Rapid colorectal diagnostic pathway	xx
Spinal surgery	
10 Year Health Plan – Referral to Treatment	
• Benign prostatic hyperplasia	
• Sleep apnoea	
• Transnasal oesophagoscopy	xx
• Haematuria	xx
• Lower urinary tract symptoms	xx
• Unilateral hearing loss/tinnitus	xx
• Dysphagia	xx
• Direct access prices and future 10 Year Health Plan BPTs	xx
2. Activity BPTs – Urgent and Emergency Care (UEC)	
Acute stroke care	
Adult asthma – aged 19 and over	
Chronic obstructive pulmonary disease	
Diabetic ketoacidosis or hypoglycaemia	
Emergency laparotomy	
Fragility hip and femur fracture	
Heart failure	
Non-ST segment elevation myocardial infarction	
3. Annual BPTs	
Adult renal dialysis	
Early inflammatory arthritis	xx
Major trauma	
Paediatric diabetes	
Paediatric epilepsy	xx
Parkinson's disease	
Referral of appropriate post-myocardial infarction (STEMI) patients to cardiac rehabilitation	

Note: grey = BPT focusing on quality; orange (x) = BPT focusing on efficiency (optimal care setting); red (xx) = BPT focusing on outpatient care

Source: NHS England (2026)³²⁶

STRUCTURE, PROCESS, OUTCOME AND PATIENT EXPERIENCE INDICATORS

In the 2026/27 NHS Payment Scheme, BPTs do not map neatly into classic categories (structure / process / outcome / patient experience), because most tariffs are primarily process-based pathways with some structural or outcome components embedded within them. Pure patient experience BPTs are essentially not used as standalone tariffs.³²⁶

Structure-oriented BPTs are relatively rare and mainly appear as eligibility conditions rather than standalone incentives. A key example is the primary hip and knee replacement outcomes BPT, where participation in data systems such as PROMs and the National Joint Registry functions as a structural requirement for payment. In this case, organisational capacity for data collection and reporting is incentivised as a precondition for receiving the tariff, rather than as an outcome in itself.

Process-oriented BPTs form the core of the system. These include, for example, the acute stroke care BPT, which incentivises rapid admission to a stroke unit, timely brain imaging, specialist assessment, and thrombolysis where appropriate. Similarly, the fragility hip fracture BPT promotes timely surgery and coordinated orthogeriatric and multidisciplinary care, while elective pathways such as primary hip and knee replacement, cataract surgery, and cholecystectomy focus on pre-operative assessment, efficient peri-operative management, early mobilisation, and safe discharge. Across these examples, payment is linked to adherence to defined care processes and pathway standards.

Outcome-oriented BPTs are more limited but increasingly present. The most prominent example is again the primary hip and knee replacement outcomes BPT, which links (part of) payment to patient-reported outcome measures such as Oxford hip and knee scores, adjusted for case mix.

Patient experience plays an important but mainly indirect role in the paediatric diabetes BPT. The tariff explicitly requires participation in the National Paediatric Diabetes Audit (NPDA), including submission of Patient Reported Experience Measures (PREMs), reflecting the importance of patient and family perspectives in diabetes care.

2.5.3.2 Target definition and incentive structure

DEFINITION AND CLINICAL BASIS OF BPT TARGETS

BPTs are designed around the principle of defining explicit clinical targets that represent best practice and linking these targets to financial incentives. The target definition typically draws on national clinical guidelines, evidence reviews, and consensus from expert clinical groups. Rather than measuring broad organisational performance, BPTs focus on specific, observable elements of care within defined pathways (for example, time to surgery, admission to specialist units, or completion of key diagnostic steps). This makes the targets operational and measurable, allowing them to be embedded directly into routine clinical coding and administrative data systems.

A key feature of BPT target definition is that it specifies minimum standards or thresholds of care delivery that are associated with improved outcomes. These may include time-based thresholds (e.g. treatment within a defined number of hours), structural requirements (e.g. care in a specialist unit), or process requirements (e.g. multidisciplinary team involvement or completion of specific assessments). In more recent designs, particularly outcome-oriented BPTs, targets have also incorporated patient-reported outcomes or registry-based benchmarks, reflecting a shift towards measuring the effectiveness of care rather than only its delivery.^{308, 326}

DESIGN AND FUNCTIONING OF THE BPT INCENTIVE STRUCTURE

The incentive structure of BPTs is typically designed as a payment uplift applied when the defined target is achieved. In most cases, providers receive a standard tariff for all eligible activity, with an additional top-up payment when best practice criteria are met. This creates a marginal financial reward for compliance with the target, rather than full payment differentiation. The size of the incentive varies



across BPTs and is generally calibrated to be large enough to encourage behavioural change, but not so large as to create excessive financial distortion or risk selection.

A binary example is the hip fracture BPT. Here, payment is triggered if a set of best practice criteria are fully met, such as surgery within a specified timeframe and timely orthogeriatric involvement. If a provider meets all required elements, the additional payment is awarded; if one or more criteria are not met, the provider does not receive the full BPT payment. The structure is therefore essentially yes/no, even though multiple components contribute to the definition of 'yes'. Partial compliance does not generate proportional payment.³⁰⁸

A clear example of a threshold-based BPT is the primary hip and knee replacement outcomes BPT. In this design, payment is conditional on whether providers meet predefined minimum thresholds. For example, a provider must achieve a minimum PROMs participation rate (e.g. at least 50%), a minimum National Joint Registry (NJR) compliance rate (e.g. 75%), and acceptable data quality standards (such as limits on unknown consent rates). In addition, providers must not perform significantly below a national benchmark for outcome improvement. If these thresholds are met, the provider receives the BPT payment.³⁰²

In some cases, the incentive structure is more granular, with differentiated payment levels depending on degrees of compliance rather than a simple binary 'met/not met' approach. An example is the acute stroke care BPT (2026/27), which is designed as a granular, multi-level incentive structure that links additional payment to progressively higher levels of compliance with evidence-based stroke care pathways. Rather than a single threshold, the BPT is structured in three conditional payment levels, each rewarding increasingly comprehensive delivery of best practice. Level 1 focuses on organisational and pathway-based requirements. Providers receive an additional payment if patients are rapidly admitted directly to a specialist acute stroke unit, spend the majority of their stay there, and are assessed by a stroke specialist within 14 hours. This level incentivises early centralisation of care and multidisciplinary stroke unit management. Level 2 introduces a time-sensitive clinical escalation. Additional payment is triggered when both brain imaging and specialist assessment occur within one hour of hospital arrival, including in the emergency department. This creates a stronger incentive for rapid diagnostic and clinical decision-making, supported by 24/7 imaging and specialist interpretation capacity. Level 3 adds a treatment-specific outcome dimension. Providers receive further payment when eligible patients are assessed for and receive thrombolysis in line with NICE guidance, with the payment covering drug costs, nursing input, and follow-up imaging. This links reimbursement directly to the delivery of acute reperfusion therapy. Operationally, the base tariff is supplemented by these layered top-ups, creating a stacked payment system where higher compliance generates higher remuneration.³²⁶

ACHIEVEMENT VERSUS IMPROVEMENT

BPTs are strictly achievement-based P4P instruments. They provide additional payment only when predefined standards of care are met for a specific patient episode or activity. The incentive is therefore triggered by compliance with specified criteria, rather than by improvement over time or performance relative to other providers.

Even where BPTs include multiple thresholds or are updated over time, they remain based on the principle of meeting a defined standard to receive payment, rather than rewarding incremental improvement.

2.5.3.3 *Hospital participation*

BPTs are part of the national NHS payment framework and therefore apply nationally across NHS England hospital providers that deliver services covered by a BPT.

For providers delivering eligible services, the BPT rules and prices are nationally defined within the NHS Payment Scheme. In that sense, participation is effectively mandatory within the national payment system rather than voluntary or opt-in.

At the same time, implementation is not entirely automatic. Many BPTs require local operational and contractual agreements between commissioners and providers. Although the eligibility criteria and prices are nationally defined, local parties often need to agree how activity will be identified, validated, monitored, and funded in practice.

For example, the 2026/27 guidance for the paediatric diabetes BPT states that providers and commissioners must agree in advance on 'data flows and supporting information to show that the best practice criteria have been achieved' as well as processes for identifying activity covered by the BPT and avoiding duplicate payment. The guidance further specifies that providers and commissioners should agree the API fixed element based on expected patient numbers and anticipated delivery of best practice. Where care is shared between providers, the distribution of BPT funding must also be negotiated locally through service-level agreements.³²⁶

Similarly, the acute stroke care BPT requires providers and commissioners to agree expected activity levels in advance and include these within the API fixed payment. Because some BPT elements are not automatically processed organisations must establish local reporting and payment arrangements to validate achievement of criteria such as timely specialist assessment or imaging.³²⁶

More generally, the NHS Payment Scheme explicitly states that, for annual BPTs and UEC BPTs, providers and commissioners must agree expected levels of BPT attainment and activity as part of the fixed payment arrangements.³²⁶

2.5.3.4 *Evaluation strategy*

We refer to the review presented in Chapter 3 of the [Scientific Report](#) for an overview of the impact of BPTs on quality of care; this section focuses on additional evaluations not covered in that review.

EVALUATION REPORT OF THE INTRODUCTION OF BPTs

An early evaluation (in 2012) of BPTs was commissioned by the Department of Health shortly after their introduction.³²⁷ While cholecystectomy was automatically embedded in the payment system, the other BPTs required local agreement between commissioners and providers and, in some cases, additional data collection to demonstrate compliance.

This evaluation used a mixed-methods design combining quantitative analysis of routine NHS activity data with qualitative fieldwork across provider organisations implementing early BPTs. Early survey evidence showed uneven uptake of BPTs where local agreement was necessary, with around 52% reporting receipt of the stroke BPT, 53% for hip fracture, and 26% for cataract surgery. Clinicians generally viewed BPTs positively compared with CQUIN, particularly because they were seen as more evidence-based and nationally consistent. However, implementation was sometimes hindered by administrative burden and limited commissioning familiarity, especially in the early phase.

A difference-in-differences analysis found mixed effects across pathways. The cholecystectomy BPT increased day-case rates by around 7 percentage points, with no evidence of reduced quality but a modest increase in waiting times. For stroke care, no additional short-term impact was detected beyond existing national improvement trends in mortality and process quality. For hip fracture care, more marked effects were observed, including a 4-percentage point relative increase in timely surgery, small reductions in 30-day mortality and improved discharge to usual residence. Effects were stronger where implementation was more comprehensive.

Overall, early evidence suggests that BPTs influenced provider behaviour, particularly where incentives were tightly linked to measurable clinical processes. However, impacts varied by clinical area and depended on clarity of criteria, baseline trends, and completeness of implementation, with strongest effects observed in hip fracture care and limited additional effects in stroke in the first year.



2.5.3.5 *Integration with hospital strategy*

BPTs are not a standalone quality programme but part of a wider set of national initiatives aimed at improving hospital quality, outcomes, and value for money. They sit within a broader NHS approach that combines financial incentives, clinical standards, and transparency tools to influence provider behaviour.

Alongside BPTs, several complementary mechanisms support the same objectives through different levers. While BPTs use nationally defined payments to reward delivery of evidence-based care pathways and better outcomes, other initiatives reinforce or monitor these goals through regulation, public reporting, patient safety learning systems, and contractual requirements. Together, these tools form a coordinated system in which financial incentives promote best practice, while other mechanisms ensure accountability, learning, and transparency across NHS services.

PATIENT SAFETY REPORTING INITIATIVES

Patient safety reporting and learning initiatives, such as the Patient Safety Incident Response Framework (PSIRF)²⁹² and the Never Events Policy Framework²⁹³, complement BPTs by focusing on learning rather than financial reward. These mechanisms aim to improve safety culture by encouraging the reporting, investigation, and systematic learning from incidents. While BPTs incentivise the delivery of safer, evidence-based care pathways (for example, reducing complications through standardised surgical care), patient safety frameworks ensure that organisations identify, understand, and learn from failures when they occur. Together, they reinforce both proactive and reactive approaches to improving safety.

RELATIONSHIP BETWEEN CQUIN AND BEST PRACTICE TARIFFS IN NHS QUALITY INCENTIVES

The CQUIN scheme was a national pay-for-performance mechanism that allowed commissioners to link a small proportion of provider income to the achievement of locally or nationally agreed quality improvement goals (see section 2.4). In practice, the two mechanisms are intended to be complementary: BPTs provide standardised incentives for delivering evidence-based care (such as hip fracture surgery or trauma care), while CQUIN can target additional or emerging quality priorities not already covered by national tariffs. Policy guidance has consistently emphasised avoiding duplication, meaning that CQUIN indicators should not overlap with areas already incentivised through BPTs.

INTEGRATION WITH CLINICAL QUALITY STANDARDS (NICE AND CLINICAL GUIDANCE)

BPTs are closely aligned with NICE guidance and national clinical standards. In many cases, BPT criteria are explicitly based on evidence-based care pathways recommended by NICE. For example:

- Hip fracture and trauma BPTs reflect NICE guidance on early surgery and multidisciplinary care.
- Elective BPTs often reinforce recommended pathways for perioperative care and recovery.

This ensures that payment incentives reinforce clinical best practice.

LINK WITH NATIONAL QUALITY IMPROVEMENT PROGRAMMES

BPTs are also closely integrated with the Getting It Right First Time (GIRFT) programme, which aims to reduce unwarranted variation in care. GIRFT identifies variation in practice, outcomes, and resource use. BPTs then translate these findings into financial incentives that encourage providers to adopt best practice.

For example:

- Orthopaedic BPTs (hip and knee replacement) reflect GIRFT recommendations on implant choice, surgical technique, and patient pathways.

- Trauma and spinal care tariffs similarly reflect GIRFT pathway standardisation.

PUBLIC PERFORMANCE REPORTING

Public performance reporting systems, such as the NHS England Data Dashboards (<https://digital.nhs.uk/dashboards>) and broader NHS Oversight Framework²⁵¹, further reinforce the impact of BPTs by increasing transparency and enabling benchmarking between providers. These tools publish information on outcomes, activity, and waiting times, allowing variation in performance to be identified and scrutinised. In areas covered by BPTs, such as orthopaedic outcomes or trauma care, published data can indirectly reinforce the same behaviours incentivised through payment by making performance visible to commissioners, regulators, and the public.

INTEGRATION WITH NATIONAL AUDIT AND OUTCOME MEASUREMENT SYSTEMS

BPTs rely heavily on national clinical audit data, which are used to define, monitor, and verify performance. Examples include:

- TARN (Trauma Audit and Research Network) for major trauma BPTs³²⁸
- NJR (National Joint Registry) for orthopaedic outcomes (<https://www.njrcentre.org.uk/>)
- PROMs for hip and knee replacement³²⁹.

These datasets allow BPTs to move beyond activity-based payment and incorporate real outcome measurement and benchmarking.

LINK WITH QUALITY REGULATION

Although BPTs are payment mechanisms rather than regulatory tools, they complement the role of the Care Quality Commission (CQC – <https://www.cqc.org.uk/>) by encouraging many of the same quality objectives through financial incentives. The CQC is the independent regulator of health and social care services in England and assesses providers against five key domains: whether services are safe, effective, caring, responsive, and well-led. These judgments are based on inspections, governance processes, staffing arrangements, patient experience, and evidence of clinical outcomes.

BPTs support these objectives from a different perspective. Rather than inspecting providers or assigning ratings, they reward hospitals for delivering recognised best practice pathways and achieving measurable standards of care. For example, BPTs may incentivise rapid access to specialist treatment, multidisciplinary team working, improved recovery pathways, accurate clinical data submission, and better patient outcomes. These are all factors that are also relevant to CQC assessments, particularly in judging whether services are safe, effective, and well-led.

In this sense, the CQC provides external assurance on the quality of care being delivered, while BPTs help shape provider behaviour internally by making high-quality care financially advantageous. Together, they represent two complementary mechanisms – regulation and incentives – used within the NHS to improve hospital performance and patient care.

CONTRACTUAL QUALITY IMPROVEMENT TOOLS

Contractual quality improvement mechanisms within the NHS Standard Contract, including Service Development and Improvement Plans (SDIPs) and Data Quality Improvement Plans (DQIPs), provide local flexibility to support service redesign and strengthen data quality.²⁹⁴ The NHS Standard Contract is the nationally mandated legal agreement used by NHS commissioners (Integrated Care Boards and NHS England) to commission healthcare services from providers, setting out the terms, service requirements, quality standards, and payment arrangements that govern the delivery of NHS-funded care. SDIPs are locally agreed NHS contract plans used to support service redesign and quality improvement beyond standard contractual requirements. DQIPs are locally agreed plans focused on



improving the accuracy, completeness, and flow of clinical and administrative data used for reporting and commissioning.

These tools complement BPTs by ensuring that the infrastructure required to deliver best practice care, such as accurate data flows, improved coding, or redesigned pathways, is in place.

2.5.3.6 *Stakeholder involvement*

Stakeholder involvement in the development of BPTs is described in detail in section 2.5.3.1, covering the identification of priority areas for new or revised BPTs, early engagement with clinical experts and professional bodies, the drafting of measurable eligibility criteria, and financial modelling and provider impact assessment.

FORMAL PUBLIC CONSULTATION CYCLE

One of the most significant recent developments is the formalisation of consultation through the NHS Payment Scheme process.^{324, 325} Rather than being introduced through relatively technical tariff guidance, BPT proposals are now included in published consultation documents accompanied by detailed annexes and open invitations for responses from trusts, commissioners, clinicians, representative bodies, and other stakeholders. This has made the process more transparent and participatory. Proposed changes can be challenged, refined, or delayed in response to sector feedback, giving providers and professional groups greater influence over final design than was common during the early years of BPT implementation.

After consultation responses are reviewed, NHS England may revise eligibility criteria, amend payment structures, or phase implementation over a longer period. This iterative approach has become particularly important in recent years, given pressures such as elective backlogs, workforce shortages, and financial constraints. The final BPT model is therefore often the result of negotiation between policy ambition and operational reality. Once implemented, tariffs are monitored to assess uptake, coding accuracy, provider behaviour, and whether intended improvements in quality or efficiency are achieved.

Overall, the consultation process for BPTs has changed substantially. It has moved from a relatively narrow exercise centred on clinicians and tariff specialists to a wider system-level process involving multiple stakeholders, formal public consultation, and continuous review. Modern BPTs are no longer simply payment incentives attached to individual services; they are now co-designed policy tools intended to shape provider behaviour and support broader NHS transformation goals.

ONGOING MONITORING

Once approved, the final BPT rules are formally published within the annexes of the NHS Payment Scheme, where they set out eligibility criteria, payment mechanisms, and implementation guidance for providers and commissioners. Following publication, NHS England and local health systems monitor the operation of BPTs through measures such as provider uptake, compliance rates, coding accuracy, and the extent to which intended clinical and operational outcomes are achieved. These outcomes may include reduced length of stay, lower complication rates, improved patient flow, and stronger adherence to recommended care pathways. Unlike earlier versions, which often remained relatively static once introduced, current BPTs are subject to more frequent review and periodic reclassification.

This is more transparent and structured than earlier years, when BPT updates were often perceived as annual tariff technical adjustments rather than strategic reforms.

2.5.3.7 *Methods used for transparency and accountability*

PERFORMANCE REPORTING

BPTs are supported by structured national data reporting requirements that enable transparency, monitoring, and verification of performance. Providers are required to submit relevant clinical and administrative data through established national datasets (such as Hospital episode Statistics (HES), national registries, and audit systems) that underpin the measurement of BPT criteria, regardless of whether they ultimately achieve full tariff eligibility. While payment is only made where BPT criteria are met, data submission obligations extend across all applicable activity to ensure completeness and comparability.

In addition, performance against BPT-related criteria is routinely monitored by commissioners using national data sources and standard reporting tools. This allows commissioners to review whether providers are meeting required thresholds, such as data completeness, adherence to defined clinical pathways, or achievement of specified outcomes. Where necessary, commissioners may seek clarification or challenge discrepancies in reported performance, particularly where BPT eligibility depends on accurate coding or data submission.

BPT performance is also reflected in wider NHS reporting frameworks, including national publications and audit outputs. Although BPT results are not typically published as standalone 'league tables', the underlying data (for example from PROMs, the National Joint Registry, or trauma audits) is publicly available and enables indirect comparison of provider performance. This provides a degree of transparency, although comparability may vary depending on case mix and data coverage.

FEEDBACK TO HOSPITALS

Providers receive feedback on performance relevant to BPTs through routine national data sources, including administrative datasets, national audits, registries, and commissioner-led contract monitoring. This feedback typically includes information on absolute performance, such as compliance with BPT eligibility criteria or related outcome indicators, alongside benchmarking against national averages or peer providers where such data are available.

Rather than constituting a dedicated BPT-specific reporting system, this information is embedded within wider NHS monitoring and payment validation processes. It supports providers in identifying gaps in data quality, clinical practice, or service organisation that may affect their ability to meet BPT requirements and achieve associated payments in future periods.



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