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Financial incentives for integrated care: A scoping review and lessons for evidence-based design

Dimitar Yordanov^{a,*}, Anne Sophie Oxholm^a, Thim Prætorius^b, Søren Rud Kristensen^a

^a Danish Centre for Health Economics, Department of Public Health, University of Southern Denmark, Campusvej 55, 5230 Odense M, Denmark

^b Research Unit for Integrated Care and Prevention, Steno Diabetes Centre Aarhus, Aarhus University Hospital, Palle Juul-Jensens Boulevard 11, 8200 Aarhus N, Denmark

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ABSTRACT

Background: In response to the increasing prevalence of people with chronic conditions, healthcare systems restructure to integrate care across providers. However, many systems fail to achieve the desired outcomes. One likely explanation is lack of financial incentives for integrating care.

Objectives: We aim to identify financial incentives used to promote integrated care across different types of providers for patients with common chronic conditions and assess the evidence on (cost-)effectiveness and the facilitators/barriers to their implementation.

Methods: This scoping review identifies studies published before December 2021, and includes 33 studies from the United States and the Netherlands.

Results: We identify four types of financial incentives: shared savings, bundled payments, pay for performance, and pay for coordination. Substantial heterogeneity in the (cost-)effectiveness of these incentives exists. Key implementation barriers are a lack of infrastructure (e.g., electronic medical records, communication channels, and clinical guidelines). To facilitate integration, financial incentives should be easy to communicate and implement, and require additional financial support, IT support, training, and guidelines.

Conclusions: All four types of financial incentives may promote integrated care but not in all contexts. Shared savings appears to be the most promising incentive type for promoting (cost-)effective care integration with the largest number of favourable studies allowing causal interpretations. The limited evidence pool makes it hard to draw firm conclusions that are transferable across contexts.

1. Introduction

In response to people living longer with one or more chronic conditions, health systems are restructuring to deliver care that is better integrated across providers and sectors [1,2]. However, research finds that integrated care interventions often do not achieve the desired patient outcomes or cost reductions [3]. One likely explanation is that financial incentives do not support care integration across providers. It has long been recognised that traditional payment models for health care, such as fee-for-service (FFS), rarely support and even work against care coordination [4]. As a result, new financial incentives aiming to support the integration of care across providers started to emerge and be tested from the early/mid 2000s in programmes such as The Dutch Bundled Payment in the Netherlands [5] and the Medicare Shared Savings Programme in the United States [6].

Based on a scoping review of the literature, this study aims to, first, identify the types of financial incentives used to promote the integration of care across providers for patients with common chronic conditions and, second, assess the evidence on the (cost-)effectiveness of these incentives and the barriers and facilitators to their implementation. We focus on patients with chronic conditions, because appropriate care for these conditions often requires coordinated inputs from multiple providers over a long time period, emphasising the need to integrating services [7–9]. Specifically, we review the evidence on five chronic conditions – asthma, chronic obstructive pulmonary disease (COPD), chronic/congestive heart failure, diabetes mellitus, and hypertension – because a systematic review by Martínez-González [10] finds that these are commonly included in evaluations of integrated care programmes for adults with chronic conditions.

We review financial incentives for the integration of care across

* Corresponding author.

E-mail addresses: dimi@sdu.dk (D. Yordanov), asoxholm@sdu.dk (A.S. Oxholm), thipra@rm.dk (T. Prætorius), srkristensen@health.sdu.dk (S.R. Kristensen).

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different types of providers. These providers may work within the same sector (e.g., the primary care sector where patients may visit general practitioners (GPs), dieticians, pharmacists etc.) or across different sectors (e.g., a patient may undergo surgery in a hospital, retrieve post-surgery supervision by a GP, and post-surgery rehabilitation by the municipality). Following Leijten et al. [11], we define integrated care as “structured efforts to provide coordinated, pro-active, person-centred, multidisciplinary care by two or more well-communicating and collaborating care providers either within or across sectors.” According to Poku et al. [12], the concept is inversely related to coordination, in that: “as services become integrated, the need for coordination decreases”.

We contribute to a growing literature on integrated care and financial incentives. Tsiachristas et al. [13] identified payment models to promote integrated chronic care in Europe. We add to their work by including studies from the last decade, studies from high-income countries also from outside the EU, and empirical insights on the payment models’ (cost-)effectiveness. Mason et al. [14] reviewed the evidence on the integration of funds for health and social care, to which we add research on the integration of funds within the same sector and payments to individual providers to promote care integration, such as pay for coordination (PFC). We contribute to the review by Stokes et al. [15] on different designs of bundled payments by adding insights on the payment schemes’ (cost-)effectiveness and barriers and facilitators for their implementation. Kaufman et al. [6] summarised evidence on the consequences of shared savings with a focus on studies from accountable care organisations (ACOs) in the United States. We add to their work by considering other types of financial incentives to promote integration of care and in high-income countries outside the United States. Reindersma et al. [16] reviewed the effects of network-level payment models on overall performance, to which we add findings on the effects for specific patient groups and learnings about implementation barriers and facilitators.

To summarise our contributions to the literature, we provide an updated systematic review of the literature on financial incentives for promoting integration of care and take stock of the types of financial incentives for integration that exist, the evidence on their (cost-)effectiveness, and facilitators and barriers for their implementation. In the following, we present the methods and findings from our scoping review and conclude by offering lessons for how to design financial incentives to support integrated care.

2. Methods

We chose a scoping review method over a traditional systematic review due to the diverse nature of the literature, making it difficult to define a single measure suitable for summarising intervention effectiveness [17]. The scoping review also allowed us to identify new types of financial incentives we were not a priori aware of. We were also able to include evidence from both quantitative and qualitative studies, which gave us a better understanding of the barriers and facilitators of successful implementation. Still, we used a systematic approach to gather the evidence as detailed below. We report in compliance with the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) checklist (see Appendix 1).

2.1. Search strategy

We systematically searched four electronic research databases (Econlit, Embase, Medline, and Scopus). Appendix 2 shows the Medline search strategy. We searched for programmes that used financial incentives to integrate care for patients with one or more of the following chronic conditions suitable for integrated care schemes in a high-income country setting [10]: asthma, COPD, chronic/congestive heart failure, diabetes mellitus, and hypertension. We focused on financial incentives promoting integrated care across different types of providers, who could

be working either within or across sectors. We based our search on three search blocks: chronic conditions, financial incentives, and integrated care. The search was developed using medical subject headings (MeSH) and text words related to the three search blocks. The exact search terms are published in a study protocol [18] and included in Appendix 3, table A3.1. We used snowballing and directed searches to find further evidence on initiatives identified in the primary search.

2.2. Study selection

Table 1 summarises our inclusion and exclusion criteria. We included published peer-reviewed studies and evaluations of financial incentives promoting integrated care for the chronic conditions asthma, COPD, chronic/congestive heart failure, diabetes mellitus, and hypertension. We excluded literature reviews, opinion pieces and editorials. We restricted our search to only include studies conducted in high-income countries due to differences in health systems design, contexts, and patient health profiles between high-income and low-and middle-income countries, which may significantly impact the (cost-)effectiveness of financial incentives and the facilitators and barriers to their implementation. We excluded studies on financial incentives for integrating care across only one type of provider (e.g., between GPs). In our study protocol, we stated that we would only include programmes supporting integration across ‘sectors’, but during the research we revised this because the term ‘sector’ is ambiguous and may refer to different types of care in different settings. We believe that lessons on how to support care integration can be identified between any two types of providers whether within the same “sector” or not. We did not restrict the search in terms of language.

We used EndNote and Covidence to remove duplicates. Three reviewers (DY, ASO, SRK) conducted simultaneously a title/abstract screening based on the inclusion and exclusion criteria of 10% of the articles. Differences were discussed and resolved by consensus agreement among the three reviewers. The remaining part of the title/abstract screening was carried out by one reviewer (DY). Identified relevant articles were then screened in full text based on the specified inclusion and exclusion criteria for final inclusion by one reviewer (DY). In addition, we included relevant studies cited by the previously identified articles or that were already known to the authors.

We also searched the grey literature and online materials for information about the identified incentive programmes in cases where the identified articles did not include sufficiently detailed information about their design [19]. Any doubts were communicated and discussed among the review team (DY, ASO, SRK), and the review team approved all studies included in the review.

2.3. Data extraction and synthesis

From each identified study, we extracted information on the name of the programme and which type of provider integration it incentivised, country, study design, and summarised the evidence on (cost-)effectiveness. In a separate template, we extracted a detailed explanation of the financial incentives used to support care integration in each programme and the barriers and facilitators to their implementation.

Table 1
Inclusion and exclusion criteria.

Inclusion criteria	Exclusion criteria
Published peer-reviewed studies evaluating financial incentives supporting integrated care for selected chronic conditions, i.e., asthma, chronic obstructive pulmonary disease (COPD), chronic/congestive heart failure, diabetes mellitus, and hypertension.	<ul style="list-style-type: none"> ■ Studies from low- and middle-income countries. ■ Financial incentives for integration of care across only one type of provider (e.g., only GPs). ■ Literature reviews, opinion pieces, and editorials.

Although the source of the barriers and facilitators for making the incentive work may have been identified in only one or a few studies, the insights were considered applicable to the specific programme in general, not just the individual study. On the basis of the extracted programme information, we classified the financial incentive type as either bundled payment, PFC, pay for performance (PFP) or shared savings, as suggested in a previous review by Tsiachristas et al. [13] and individual studies of the shared savings programme [20]. However, the scoping review methodology ensured that we were open to identify new types of financial incentives that did not fit into existing categories.

3. Results

3.1. Search results

Fig. 1 illustrates the study selection process. The initial search of the four databases identified 8521 articles. Studies that were identified through other sources were also considered. We included two studies from our prior knowledge and 14 studies identified through snowballing. After excluding 4789 duplicates using EndNote and Covidence, 3748 studies were left for title/abstract screening. After the title/abstract screening, 3585 studies were found not relevant (e.g., literature reviews, conference papers, papers not focusing on the chronic conditions of interest). A total of 163 studies were included for full-text review of which 130 studies were subsequently excluded. In the end, we included 33 studies in the review (one study [21] is listed twice in Table 2, as it provides evidence for two programmes).

Table 2 provides an overview of the included studies. The studies cover eight unique programmes using financial incentives to support integration of care. Appendix 4 provides a brief description of each programme along with a list of identified barriers and facilitators to their implementation. The studies are based on different evaluation designs, e.g., qualitative interviews and quantitative studies using before-and-after analysis, cross-sectional analysis, cohort analysis, interrupted time series analysis, or difference-in-differences analysis. Some of the programmes cover health conditions beyond the scope of this study, but

in such cases, we only extracted information about the conditions of interest.

3.2. Types of identified financial incentives

The eight identified programmes represent four types of financial incentives for integration of care, i.e., bundled payments (used in two programmes), PFC (one programme), PFP (one programme), shared savings (three programmes), and a combination of shared savings and PFP (one programme). We grouped the identified programmes based on already existing classifications [13,47], but we also kept open to adding new categories of payment models.

Bundled-payment models aim to facilitate the integration of care and improve health outcomes and expenditure by paying a single fee for a bundle of services needed to provide the care. The term bundled payment is used for a range of payment models that differ in the scope of elements included in the bundle and therefore also in the levels of integration they can be expected to achieve [15]. For example, bundles can differ in the population, conditions, time period, and providers covered. In this review, in line with our inclusion criteria, we focus only on bundled payments that cover more than one type of provider. In contrast to payment models that pay providers separately for their activities, such as FFS, the type of bundled payment models we consider creates incentives for providers to consider how their actions impact the need for actions by other care providers, hereby in theory reducing unnecessary use of care across providers.

PFC models provide payments to one or more providers to be responsible for coordinating care for patients with certain conditions [48]. Empirically, such payments have often been given as an annual fixed payment per patient to cover coordination costs, but in principle, payments could also be tied directly to the coordination effort itself in which case the payment is similar to a FFS or a process indicator based PFP [13]. PFP schemes aim to achieve specific healthcare targets for a single or multiple conditions by linking provider payment structure to a number of process or outcome measures of performance [49]. A large literature exists on the impact of PFP schemes in healthcare (see e.g.

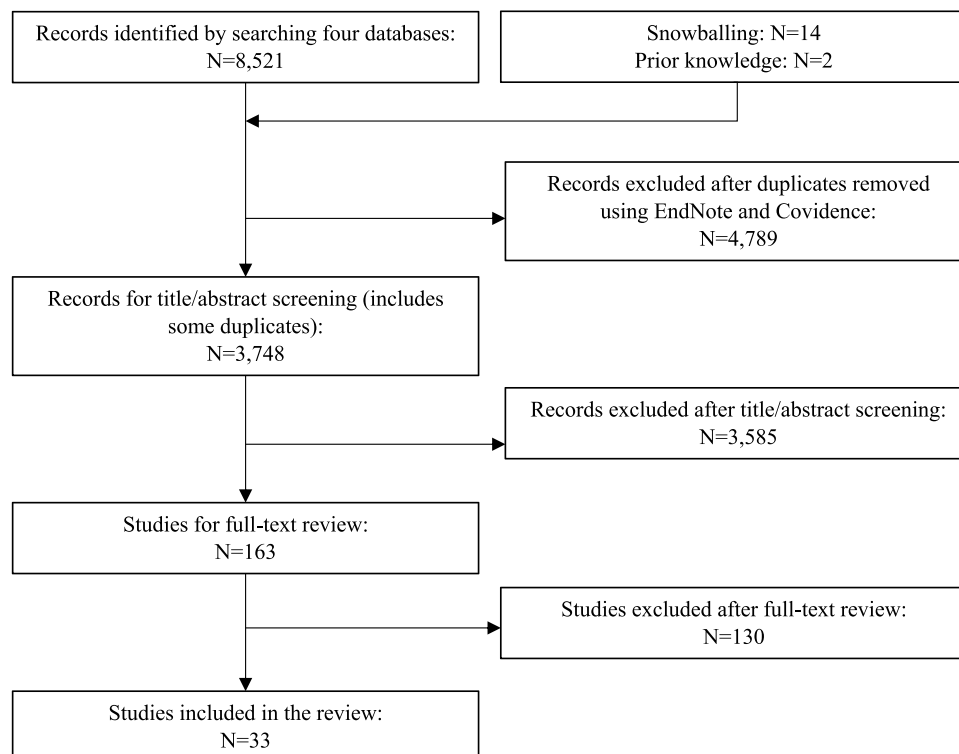


Fig. 1. Flow diagram.

Table 2

Financial incentive programmes included in the review and reported country of origin, study, evaluation design, and (cost-)effectiveness.

Financial incentive	Programme	Paper	Evidence Evaluation design	Effectiveness	Cost-effectiveness
Bundled payment	Medicare's Bundled Payments for Care Improvement (BPCI) (US) Integration across primary and secondary care	[22]	Before and after analysis.	During the first year of participation in the programme, hospitals experienced: <ul style="list-style-type: none"> • No difference in all-cause readmission rates at 30 or 90 days. • No difference in readmission rates due to acute exacerbations of COPD at 30 or 90 days. • Medicare BPCI intervention did not reduce readmission rates or costs after hospitalisation of COPD patients. 	BPCI intervention did not reduce costs.
		[21]	Interrupted time series study of the effect of HRRP with sub-group analyses by uptake of BCPI and other voluntary incentive programmes.	Study period: 2008 - 2015. Participation in the BCPI programme and the meaningful use programme was associated with an additional 1.2 percentage point reduction for heart failure patients (note that the meaningful use programme alone was associated with a reduction of 1 percentage point reduction).	Not evaluated.
		[23]	Difference-in-differences with matching. Comparison between BPCI and non-BPCI hospitals.	Seven months after participating in the programme, hospital experienced no difference between intervention and control hospitals for clinical complexity, length of stay, emergency department use, and readmission within 30 or 90 days.	BPCI intervention did not reduce costs.
		[24]	Cross-sectional study.	Study period: October 2013 - January 2017. Compared to non-participating hospitals, hospitals participating in the program had: <ul style="list-style-type: none"> • Higher CHF discharge volumes. • Lower risk-standardised 30-day mortality rates for CHF (11.3% vs 12.4%). 	Not evaluated.
		[25]	Difference-in-differences.	Study period: January 2013 – September 2016. Comparing hospitals joining the programme at different stage, the authors found hospitals that joined the programme at early stage did not begin to achieve savings before the first two years of participation. “Early joiners” had greater savings than hospitals in the control group 24–30 months after joining the programme of \$663 per episode.	Not evaluated.
		[26]	Difference-in-differences with matching. Comparison between BPCI and non-BPCI hospitals.	Three years after participating in the programme, hospitals experienced: <ul style="list-style-type: none"> • 1.2% decrease in total episode spending. • 6.3% decrease in skilled nursing facilities spending. • 6.2% decrease in number of days spent in skilled nursing facilities. • No change in 90-day mortality rate. 	Not evaluated.
	The Dutch Bundled Payment Programme (NL) Integration within primary care specialties	[27]	Qualitative interviews. Participants were patients, insurers, care groups, and subcontracted healthcare providers.	Based on the qualitative interviews conducted before February 2012, the authors found that the initiative generated the following effects: <ul style="list-style-type: none"> • Improved organisation, coordination, and collaboration. • Better adherence to care protocols. • More transparency. • High variation in performance among care groups. • Dominance of the care group by GPs. • Large price variation among care groups. 	Not evaluated.

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Table 2 (continued)

Financial incentive	Programme	Paper	Evidence Evaluation design	Effectiveness	Cost-effectiveness
		[28]	Questionnaire. Participant were 336 Dutch dietitians.	Based on the questionnaire sent out in August 2011 (about 2 years after the programme introduction), the authors found that according to dietitians, the initiative generated the following effects: <ul style="list-style-type: none"> • Increase in multidisciplinary collaboration. • Increase in efficiency of health care. • Transparency in quality of care delivered. • Increase in administrative tasks (due to double reporting). • Dietetic care substituted by other disciplines. 	Not evaluated.
		[29]	Qualitative interviews. Participants were care group managers and staff, care purchasers, and healthcare providers.	Based on the qualitative interviews conducted between May 2013 and January 2014, the authors found that the initiative led to: <ul style="list-style-type: none"> • Improved communication and cooperation. • Insufficient and unnecessary provision of care. • Deteriorated preconditions for person-centred care. 	Not evaluated.
		[30]	Difference-in-differences with matching. Comparison between patients covered by bundled payments to patients not covered by bundled payments.	Five years after the implementation, the bundled payments did not reduce total and secondary care expenditures per person in the long term. However, the study does not explore health outcomes. <ul style="list-style-type: none"> • Increased healthcare expenditure (half-year increase, per patient): 233EUR for DM2; 609EUR for COPD and 231EUR for VRM. • Healthcare expenditure increases differed significantly between patients with multimorbidity and without compared to the control group. Current bundled payments design is inappropriate to reduce expenditure for patients with multimorbidity. 	Not evaluated.
Pay for coordination	Cigna's Collaborative Accountable Care Initiative (US) Integration across primary and secondary care	[31]	Difference-in-differences. Comparison between patients covered by the initiative with patients in the same area not participating in the initiative.	After one year, the results are small, mixed, and statistically insignificant. The authors assessed that the initiative revealed favourable trends in quality of care and costs compared to market trends.	Not evaluated.
		[32]	Difference-in-differences. Comparison between patients covered by Cigna's CAC initiative with Cigna's patients in the same area not being covered by the initiative.	After two years of running, the programme showed 5.7% reduction in net spending per patient for 2010 to 2011 compared to spending without the initiative.	Not evaluated.
Pay for performance	Aetna-NovaHealth Pilot Programme (US) Integration within primary care specialties	[33]	Cross-sectional design.	Study period 2009–2011. Compared to state-wide unmanaged Medicare populations, the population in the pilot program had: <ul style="list-style-type: none"> • 50% fewer hospital days per 1000 patients. • 45% fewer admissions. • 56% fewer readmissions. Total per member per month costs for NovaHealth's patients were 16.5% to 33% lower than other Aetna Medicare Advantage members.	Not evaluated.
Shared Savings	CaIPERS HMO (US) Integration across primary and secondary care	[34]	Difference-in-differences with matching.	After five years, the study found: <ul style="list-style-type: none"> • Higher inpatient and outpatient spending for ACO patients in the first two years. • Lower outpatient spending for ACO patients in year 4 and 5 driven by reductions in ambulatory care including primary care visits, and 	Not evaluated.

(continued on next page)

Table 2 (continued)

Financial incentive	Programme	Paper	Evidence Evaluation design	Effectiveness	Cost-effectiveness
		Zhang et al., 2021	Difference-in-differences with matching.	<p>less spending on laboratory testing and radiology.</p> <ul style="list-style-type: none"> • No change in inpatient admissions, except an increase in the 5th year. • No change in the outpatient visits except for an increase in year 3, but a reduction in primary care visits in year 4 and 5 and increases in specialist and radiology visits across all years. • No change in post-discharge readmissions, office visits and prescriptions filled except an increase in 30-day office visits in the 2nd year of the ACO. • No impact on comprehensive diabetes care (hemoglobin A1c testing and medical attention for nephropathy), except an increase in medical attention for nephropathy in the 5th year. <p>After five years, the study found:</p> <ul style="list-style-type: none"> • No statistically significant change in average total drug spending per member, except a 7% increase in ACO spending on generics in year 2, and a 7% increase in the average Brand name prescriptions in the same year. • No statistically significant change in prescriptions filled, except a 3% and 4% decrease in prescription filled in ACOs in year 3 and 4 respectively. • No impact on generic substitution except 2% increases in generic substitution in year 4 and 5 of the ACO. • No impact on outpatient quality of care, except a slower increase in annual monitoring for patients on persistent medications in ACOs (which included (diabetes, cardiovascular disease, and asthma). 	Not evaluated.
	Medicare Shared Savings Programme (MSSP) (US) Integration across primary and secondary care	[35]	Difference-in-differences. Comparison between beneficiaries served by ACOs vs beneficiaries served by non-ACOs with different estimates for entry in 2012 and 2013.	<p>Within the first year after the introduction of the programme, providers experienced:</p> <ul style="list-style-type: none"> • 144 USD (1.4%) reduction in spending per beneficiary enrolled in the ACO in 2012 (driven by a 1.4% reduction inpatient care, a 2.1% reduction in outpatient care (but note a 1.5% increase office-based outpatient care). • 6.1% reduction in skilled nursing facilities, and a 2.7% reduction in spending on home health care). • No statistically significant difference for those enrolled in 2013. • No statistically significant difference in 30-day all cause readmission rates, Hospitalisations for ACSCs in total, for congestive heart failure, cardiovascular disease or diabetes, but decrease in hospitalisations (0.001) for COPD or Asthma. • Increase in preventive services for diabetes patients (LDL cholesterol testing) but not for Glycated haemoglobin testing or diabetic retinal examination. • No difference in provision of low-value services. 	Estimates suggest no net savings to medicare: aggregate \$238 m spending reduction but bonus payments of \$244 m because most ACOs chose one-sided risk contracts and losses from ACOs spending above benchmark were not recouped

(continued on next page)

Table 2 (continued)

Financial incentive	Programme	Paper	Evidence Evaluation design	Effectiveness	Cost-effectiveness
		[20]	Difference-in-differences.	After three years, the changes in medication use for in ACOs were minimal: <ul style="list-style-type: none"> • In the year 2 cohort, a 0.5 percentage point (1.5%) increase in the percentage of hypertension patients using thiazides. • In the year 1 cohort, a 0.3 percentage points (0.4%) increase in days covered of beta blockers. • In year 1 and 2 cohorts a 0.5 percentage points (0.6%) increase in the proportion of days covered by metformin for diabetes patients. • No statistically significant changes in statins, ACE-inhibitors, or calcium channel blockers. 	Not evaluated.
		[21]	Interrupted time series of the effect of the HRRP with sub-group analyses by uptake of ACO and other voluntary incentive programmes.	Study period 2008–2015. <ul style="list-style-type: none"> • Participation in an ACO was associated with an additional 0.8 percentage point reduction in readmission rates after the introduction of the HRRP. • Participation in ACO and the meaningful use programme was associated with a 1.3 percentage point additional reduction in readmission rates for heart failure patients but note that the meaningful use programme alone was associated with a reduction of 1 percentage point reduction. 	Not evaluated.
		[36]	Difference-in-differences. Comparison between hospital participating in the program with other hospitals.	Compared to nonparticipating hospitals, within the first year after the introduction of the programme, participating hospitals experienced: <ul style="list-style-type: none"> • 0.5 percentage points reduction in readmissions for patients with heart failure. • 0.1 percentage points reduction in all-cause readmissions. 	Not evaluated.
		[37]	Cross-sectional study.	After one year of participation in MSSP ACOs, participation was not associated with lower hospitalisation rates for older adults with diabetes.	Not evaluated.
		[38]	Difference-in-differences. Comparison between beneficiaries served by ACOs vs beneficiaries served by non-ACOs. Different estimates for entry in 2012, 2013 and 2014 and by type of ACO.	After three years of participating, providers experienced: <ul style="list-style-type: none"> • 5% (474 USD) spending reduction for physician group ACOs in 2015. Drivers similar to 2016 study. • Smaller effect sizes with shorter participation and for hospital-integrated ACOs (for this group, no statistically significant effect for cohorts entering after 2012). • No impact on ACSC admissions. 	Spending reductions greater than shared savings bonus payments for physician-group ACOs for all cohorts (Net spending change \$140 m for 2012 cohort, \$64 m for 2013 cohort, \$52 m for 2014 cohort), while only 2012 cohort showed a spending reduction statistically significantly greater than bonus payments for hospital-integrated ACOs (\$5.6 m net spending change).
		[39]	Mixed-methods cohort study design integrating administrative and clinical data. Data collection in 2014–2015 and 2016–2017 of clinician and staff surveys, surveys of adult patients, and key informant interviews of clinicians, staff, and administrators from ACO participating practices that were either high or low adopters of patient engagement strategies.	Patient reported and clinical outcomes did not improve more over time at practices with high levels of patient engagement strategies.	Not evaluated.
		[40]	Association study.	Study period 2014–2016. MSSP ACOs with greater nurse practitioner involvement had: <ul style="list-style-type: none"> • Slightly fewer risk adjusted readmissions (0.3 percentage point difference between highest and lowest tertile of involvement). 	Not evaluated.

(continued on next page)

Table 2 (continued)

Financial incentive	Programme	Paper	Evidence Evaluation design	Effectiveness	Cost-effectiveness
		[41]	Association study.	<ul style="list-style-type: none"> Better preventive care (6 percentage points difference between highest and lowest tertile of involvement). No impact on the patient and caregiver experience, chronic disease management and medication management. <p>Patients hospitalised for heart failure in an MSSP ACO were more likely to receive care that fulfilled 3 out of 5 heart failure specific quality standards (percentage point (pp) differences in achievement:</p> <ul style="list-style-type: none"> ACEI/ARB/ARNI at discharge: 2pp Post discharge appointment made: 6pp, HF defect-free care: 100% compliance: 4pp <p>and 4 out of 9 general quality measures (percentage point differences (pp) in achievement:</p> <ul style="list-style-type: none"> Anticoagulation for atrial fibrillation or atrial flutter: 5pp CRT-D or CRT-P placed or prescribed at discharge: 7pp ICD counselling or ICD placed or prescribed at discharge: 4pp Follow-up visit made ≤ 7 Days: (2pp) lower 1-year mortality rates (4 pp) No difference in all-cause readmission rates or spending in the year of hospitalisation. 	Not evaluated.
	Pioneer ACO (US) Integration across primary and secondary care	McWilliams et al., 2015	Difference-in-differences.	<p>After one year of spending, Pioneer ACOs demonstrated:</p> <ul style="list-style-type: none"> 1.2% reduction in overall spending compared to non-ACOs driven by reductions in acute hospital inpatient care, hospital outpatient care as well skilled nursing facility post-acute care. There was an increase in office-based outpatient care, but no change in home health care, durable medical equipment or hospice use. No change in ambulatory care sensitive conditions for CHF, COPD or asthma or cardiovascular disease and diabetes. Slight (less than 1%) increases in the use of preventative services for diabetes patients (glycated hemoglobin testing, low-density lipoprotein cholesterol testing, and diabetic retinal examination). 	Estimated spending reductions of USD 118 m compared to USD 76 paid out in bonuses. The assessment does not include costs of administering the ACO programme or costs of implementing strategies to limit spending.
Shared Savings + PFP	The Alternative Quality Contract (AQC) (US) Integration across primary and secondary care	[42]	Difference-in-differences with matching. Comparison between eligible enrollees with an AQC-provider with patients enrolled with a non-AQC-provider under BCBS.	<p>After one year of participating, AQC providers experienced:</p> <ul style="list-style-type: none"> 1.9% less growth in eligible enrollees' expenditures. Patients with the highest risk score accounted for most of the savings. Savings mainly obtained from a change in referrals to outpatient facilities with lower fees for procedures, imaging, and testing. The use of these services did not change. No statistically significant changes in the expenditures for physician services or for inpatient care. 2.6 percentage points increase in the proportion of eligible enrollees who met the PFP target for chronic care management. 	Not evaluated. The authors assessed that total payments to AQC-groups (incl. PFP and surplus savings) were higher than the estimated savings.

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Table 2 (continued)

Financial incentive	Programme	Paper	Evidence Evaluation design	Effectiveness	Cost-effectiveness
		Mechanic et al. 2011	Difference-in-differences with matching. Comparison between eligible enrollees with an AQC-provider with patients enrolled with a non-AQC-provider under BCBS.	<p>The study does not report patient-level data. The study does not report patient-level data. The study does not report patient-level data.</p> <p>After two years of participating, AQC providers experienced:</p> <ul style="list-style-type: none"> • 3.7 percentage point (2.6 percentage point in year 1 and 4.7 percentage point in year 2) increase in the proportion of eligible enrollees who met the PFP target for chronic care management. 	Not evaluated.
		Song et al., 2013	Difference-in-differences with matching. Comparison between eligible enrollees with an AQC-provider with patients enrolled with a non-AQC-provider under BCBS.	<p>After two years of participating, AQC providers experienced:</p> <ul style="list-style-type: none"> • 7.4% (6.8% in year 1 and 7.7% in year 2) less spending in eligible enrollees' expenditures on cardiovascular services. • Savings mainly obtained from a change in referrals to facilities with lower fees and also less use of angioplasty. • No statistically significant changes in the use of other cardiovascular services. 	Not evaluated.
		[44]	Difference-in-differences with matching. Comparison between ineligible enrollees (FFS medicare patients) with an AQC-provider with patients enrolled with a non-AQC-provider under BCBS.	<p>After two years of participating, AQC providers experienced:</p> <ul style="list-style-type: none"> • 3.4% (not statistically significant in year 1) less growth in ineligible enrollees patients' expenditures. Patients with five or more conditions particularly accounted for the savings. • Savings mainly obtained from less spending on outpatient care, i.e. procedures, imaging, and testing. • 3.1 percentage points and 2.5 percentage points increases in the proportion of ineligible enrollees diabetes patients and cardiovascular patients, respectively, tested for low-density lipoprotein cholesterol • No statistically significant changes in performance on other quality measures (e.g. HCA1b testing, diabetic retinal examinations, admissions for ACSCs related to cardiovascular disease or diabetes etc.). 	Not evaluated.
		Sharp et al. 2013	Difference-in-differences with matching. Comparison between eligible enrollees with an AQC-provider with patients enrolled with a non-AQC-provider under BCBS.	<p>After one year of participating, AQC providers experienced no statistically significant change in total use of emergency departments.</p>	Not evaluated.
		[45]	Difference-in-differences with matching. Comparison between eligible enrollees with an AQC-provider under BCBS with commercially insured patients in employer-sponsored plans across eight other North-eastern states.	<p>After four years of participating, AQC providers experienced:</p> <ul style="list-style-type: none"> • 6.8% less growth in eligible enrollees patients' expenditures. • Savings mainly obtained from an outpatient setting and for procedures, imaging, and tests. The savings were explained by both lower prices and less utilisation. • 3.9 percentage point increase in the proportion of eligible enrollees who 	Not evaluated. The authors assessed that total payments to provider groups, including surplus savings, PFP, and infrastructure support, were likely higher than the estimated savings in year 1 to 3. However, total payments were likely less than savings in year 4.

(continued on next page)

Table 2 (continued)

Financial incentive	Programme	Paper	Evidence Evaluation design	Effectiveness	Cost-effectiveness
		Afendulis et al. 2014	Difference-in-differences with matching. Comparison between eligible enrollees with an AQC-provider with patients enrolled with a non-AQC-provider under BCBS.	met the PFP target for chronic care management. No statistically significant changes in the use of prescription drugs (both overall and for diabetes drugs, statins etc.).	Not evaluated.
		[46]	Difference-in-differences with matching. Comparison between eligible enrollees with an AQC-provider under BCBS with commercially insured patients in employer-sponsored plans across eight other North-eastern states. Quality measures are compared with averages in New England and the US.	After eight years of participating, AQC providers experienced: <ul style="list-style-type: none"> • 11.7% less growth in eligible enrollees' expenditures. • Savings mainly obtained from a by lower fees in the early years, whereas in the later years by use of fewer services, including laboratory testing, certain imaging tests, and emergency department visits. • 7 percentage point increase in the proportion of eligible enrollees who met the PFP target for chronic care management. 	Not evaluated. The authors assessed that total payments to provider groups, including surplus savings, PFP, and infrastructure support, were likely higher than the estimated savings in the early years. However, total payments were generally less than savings in the later years.

Notes: COPD: Chronic obstructive pulmonary disease; HRRP: Hospital readmission reduction programme; CHF: Congestive heart failure; DM2: Type-2 diabetes mellitus; VRM: Cardiovascular risk management; ACSCs: Ambulatory care-sensitive conditions; LDL: Low-density lipoprotein; ACE: Angiotensin-converting enzyme; ACEI: Angiotensin-converting enzyme inhibitor; ARB: Angiotensin receptor blocker; ARNI: Angiotensin receptor neprilysin inhibitor; CRT-D: Cardiac resynchronisation therapy-defibrillator; CRT-P: Cardiac resynchronisation therapy-pacemaker; ICD: Implantable cardioverter defibrillator; One study [21] is listed twice in the table, as it provides evidence for two programmes.

[50] for a summary), but not on the use of PFP to specifically facilitate integration of care (e.g. paying GPs for conducting follow up consultations with patients that have recently been discharged from hospital (process) or paying GPs for reducing ambulatory care sensitive hospital admissions).

Shared savings models make a group of providers jointly accountable for the care of a defined population. A shared savings model creates a financial incentive for providers to jointly provide efficient care by ensuring that care is provided in the least costly setting and with a focus on preventing future health care costs. Under these models, the base payment of providers remains for example FFS or a global payment. If providers can jointly obtain savings for their patients' care compared to a pre-set saving target, they keep a proportion of these savings. Risk sharing under shared savings models can be either one-sided or two-sided. In the one-sided scenario, providers only share savings with payers if targets are reached. In the two-sided scenario, providers also share the risk of paying part of the expenses over the target levels, which yields even stronger financial incentives. Shared savings models typically also require that providers live up to certain care quality standards. The simultaneous monitoring or incentivising of care quality, often with minimum performance levels specified, is intended to ensure that providers do not skimp on care to make cost savings.

3.3. Bundled payments

Our review identified evidence from two programmes that used bundled payments to support integration of care for our target population: The Dutch Bundled Payment Programme (DBPP) and Medicare's Bundled Payments for Care Improvement (BPCI) in the United States. Under DBPP, payers make a single prospective risk-adjusted annual payment to a multidisciplinary group of healthcare providers to cover multiple elements of care bundled in integrated packages of services for patients with T2D, COPD, and vascular risk management [5]. These groups of healthcare providers are organised as legal entities accountable for providing care to their patients. The legal entities freely negotiate the size of the bundled payment with insurers. The structure of the groups of healthcare providers under these entities is not fixed and may vary across groups with different number and types of specialists across

sectors (mostly specialists from primary care). In some cases, all services that the entity is paid for are provided within the care group, while in other cases, subcontractors are used.

Similar to DBPP, the BPCI programme aims to improve health outcomes and decrease expenditure by paying a single fee to care providers, which can include hospitals, post-acute care providers, physicians, and others. Unlike DBPP, which focuses mainly on primary care providers and on preventing expensive outpatient-specialist care and hospitalisations, the BPCI programme focuses on inpatient care and covers all care in the 90-day post-discharge period [51]. The BPCI programme consists of four broadly defined models that differ in the care services included in the bundle and episodes covered by the bundle. Providers may choose the model that they prefer. More than 95% of the providers worked under models, where providers are paid on a FFS-basis, and expenditures were compared retrospectively to a bundled payment amount. If the expenditures were kept under or exceeded the target price, a payment amount were either shared with or paid by the providers [52].

3.3.1. Evidence of (cost-)effectiveness

We identified four studies investigating the impact of implementing the DBPP [27–30]. The results of these studies are mixed. The time period of the studies varied from two to five years after the implementation of the programme. Two studies based on qualitative interviews indicated improved collaboration and coordination of the provision of healthcare within the first two and four years of the programme [27,29]. A two-year study based on questionnaire data also reported improved collaboration and efficiency of care, but noted drawbacks such as increased administrative tasks and absence of payment for patients with co- and multi-morbidity [28]. A five-year study using a matched difference-in-differences design found that the bundled payment increased healthcare expenditure rather than the intended decrease in expenditure [30].

Six studies investigated the effects of implementing the BPCI programme [21–26]. A study investigating BPCI using a difference-in-differences approach found no reduction in clinical complexity, length of stay, emergency department use, and readmission within 30 or 90 days, seven months after the implementation of the

programme [23]. A study measuring the early effects of joining the programme using a difference-in-differences approach found that hospitals need about two years in the programme before achieving savings [25]. Two studies using interrupted time series and difference-in-differences found participation in the BPCI programme led to a modest decrease in expenditure two and three years after implementing the initiative, respectively [21,26]. A three-year cross-sectional study found that hospitals participating in the BPCI programme have higher congestive heart failure (CHF) discharge volumes and lower risk-standardised 30-day mortality rates for CHF among patients living with a chronic condition compared to non-participating hospitals [24].

3.3.2. Facilitators and barriers

The evaluations show in the case of the DBPP that limiting the scope of bundled payment to certain types of care may create challenges for providers and hinder the effectiveness of the financial incentive. Covering care only for one condition or providing care only in one health sector limits the ability of the programme to achieve results, and especially for patients with multimorbidity [30]. Thus, bundled payments covering health care across sectors and morbidities may improve the performance of the initiatives. Providers covered by the BPCI had limited influence on subcontractors' care, but including these subcontractors in the programme, and thereby aligning goals across providers, may improve the outcomes [23].

Evaluations of the DBPP also suggest that changing the financial incentive model requires innovations and changes both within and outside provider groups. Provider groups most likely need to introduce new IT systems, new communication channels, or new guidelines. The groups should, however, be careful when introducing these changes simultaneously in a short period of time because it may make the individual providers hesitant, and reluctant to make the desired changes. It is therefore paramount to allocate sufficient time for implementing and adjusting to the new work routines when introducing bundled payments [29].

3.4. Pay for coordination

We identified two studies investigating the effects of implementing a PFC model in Cigna's Collaborative Accountable Care initiative launched in 2008 in the United States [31,32]. In addition to the standard FFS, participating practices also received a fee for specific coordination efforts. This coordination fee was increased if specific performance targets were reached. Specially trained nurses were appointed to act as care coordinators.

3.4.1. Evidence of effectiveness

The two studies evaluating the Cigna's Collaborative Accountable Care initiative used a difference-in-differences approach. One study evaluated the programme one year after implementation and found no statistically significant impact on outcomes of care [31]. The other study covered a two-year period after implementation and found a 5.7% reduction in net spending [32].

3.4.2. Facilitators and barriers

Providing initial funding for care coordinator positions, support for practice transformation, IT support along with a good collaboration between providers and insurers facilitated the adoption of the programme [31]. Like other financial incentive schemes (e.g., DBPP above), other innovations were introduced simultaneously to the PFC model, challenging providers to deal with a few novelties at the same time. Policymakers should therefore be careful not to introduce other large-scale innovations (e.g., additional regulations or new electronic health record systems) alongside the integrated care initiatives. Finally, when paying a group of providers for coordination of care, providers within the group are expected to have a common understanding of the aims of the scheme. However, this may not be the case for providers

outside the care group, which may make it difficult to achieve full cooperation between the care group and external providers [31].

3.5. Pay for performance

The Aetna-NovaHealth pilot programme in the United States was the only initiative for which we identified evidence on using PFP alone to facilitate integration of care for patients with our selected chronic conditions. Under the Aetna-NovaHealth programme, providers such as primary care physicians, specialist physicians, nurse practitioners, and physician assistants, received an initial coordination payment (not performance contingent) and additional payments for achieving quality and efficiency goals related to care integration. Providers' performances were assessed on indicators capturing access to care, care coordination, chronic disease management, and avoidable hospital admissions. The payments were made in addition to the regular FFS payments.

3.5.1. Evidence of (cost-)effectiveness

The study investigating the Aetna-NovaHealth pilot programme used a cross-sectional analysis to analyse data from the programme's first two years. Compared to other Aetna Medicare Advantage members, beneficiaries exposed to the Aetna-NovaHealth pilot programme had fewer hospital days, admissions, and readmissions. The total costs per member per month under the Aetna-NovaHealth pilot programme were up to 33% lower compared to other Aetna Medicare Advantage members [33].

3.5.2. Facilitators and barriers

The Aetna-NovaHealth pilot programme suggest that resources such as physician leadership, providers' commitment, and adequate IT systems were of key importance for facilitating integration of care. However, poor coordination between the provider group and the payer could create distrust and reluctance to share information and serve as a barrier to integration of care.

3.6. Shared savings

Shared savings contracts were first piloted in the mid-2000s in the United States and were scaled-up in 2012 with the Medicare Shared Savings Programme (MSSP). Under MSSP, providers from primary care form physician-group accountable care organisations (ACOs) and primary and secondary care providers form hospital-integrated ACOs. Physician-group ACOs have greater incentives to reduce spending than hospital-integrated ACOs, because the latter risk losing FFS payments from a co-existing activity-based payment framework [38]. The Pioneer ACO model was a separate shared savings model under Medicare similar to MSSP but designed for providers with experience in care coordination. We also identified commercial provider payment models from the United States using shared savings in combination with PFP, namely the Blue Cross Blue Shield Alternative Quality Contract (AQC) programme. The programme targets physician groups and, in some cases, hospitals. Under the MSSP, provider groups could choose between a one-sided and two-sided risk sharing model, whereas under the AQC programme by the private insurer Blue Cross Blue Shield, risk sharing was mandatorily two-sided and supplemented by PFP. Another commercial ACO, the California Public Employees Retirement System (CalPERS) also used a two-sided risk-sharing model that included spending on health care as well as medication. The risk borne by each partner was adjusted to account for the individual organisation's ability to affect spending. The CalPERS shared savings model did not include PFP.

3.6.1. Evidence of (cost-)effectiveness

The MSSP is the shared savings programme where we identified most evidence (a total of 9 studies) within the scope of this review [20,21, 35–41]. The most comprehensive and long-term evaluation [38] found that physician-group ACOs generated spending reductions that grew

over time. After three years, the reductions were 5% compared to a control group of patients not served by an ACO. The spending reductions were greater than the bonus payments made for the physician-group ACOs. However, net-savings were only present after three years for the hospital-integrated ACOs. The savings were driven by a reduction in both inpatient and outpatient care and spending on skilled nursing facilities and home health care. The evaluations did not include the value of any changes in the quality of life or wellbeing the programme may have generated for the patients.

The MSSP shared savings programme did not include drug spending when calculating the spending (threshold) of an ACO. The programme did, however, include quality indicators relating to disease management that may be affected by medication use. The ACOs were therefore financially incentivised to invest in ensuring appropriate medication use. However, a study by McWilliams et al. [20] found no meaningful changes in drug use for diabetes patients and patients with cardiovascular disease enrolled in an MSSP ACO after three years. In contrast, the commercial California Public Employees' Retirement System (CalPERS) included two-sided risk sharing of pharmaceutical spending but did not have quality measures explicitly included in the contract. A study by Zhang et al. [34] suggested that spending on medication and quality did not change after one year. After five years, the CalPERS ACO was successful in reducing inpatient and outpatient spending, but this success only materialised in years 4 and 5 of the ACO and came after an increase in spending during the early years of the ACO. An evaluation of the Pioneers ACO programme after one year of operation found that it was associated with modest reductions in overall spending, and very slight increases in the preventive care for diabetes patients.

Across the evidence from the AQC programme, results are similar and of equal quality. In a series of difference-in-differences studies with matching controls [42–46], the AQC version of shared savings shows reduced growth in patients' healthcare expenditure while maintaining or increasing the quality of chronic care management (supported by PFP). The studies of AQC did not formally evaluate the cost-effectiveness of the payment scheme, but they assessed that the estimated savings exceeded performance payments and running costs after the first three years of operation.

3.6.2. Facilitators and barriers

Synergy effects were identified for the MSSP when implemented along with other incentive schemes. Ryan et al. [21] studied the impact of another incentive programme, i.e., the Medicare Hospital Readmission Reduction Programme, and found that hospitals that were also participating in the MSSP ACO programme or MSSP together with the Meaningful Use Programme were more likely to generate reductions in readmissions. The staff at hand also affected the effectiveness of MSSP. Huang et al. [40] found that MSSP ACOs with greater nurse practitioner involvement had slightly lower readmission rates and better preventive care, but they did not show an impact on caregiver experience, disease management and medication management compared to those with regular nurse practitioner involvement. Rodriguez et al. [39] found that the use of patient engagement strategies alongside an incentives scheme was not associated with better patient reported or clinical outcomes. The incentives to generate shared savings may be influenced by pre-existing payment schemes. For example, in the MSSP programme, physician ACOs generated greater and more cost-effective results than hospital-integrated ACOs, which could lose fee for service payments when reducing activity [38].

Factors facilitating the effectiveness of the AQC programme included the provision of technical support to providers, such as feedback reports on their expenditure, utilisation and quality of care, and information on the patients that did not receive recommended care. Other facilitating factors were when (re)admission processes were supported by case managers and clinicians, and when discharged patients were contacted automatically. The programme also yielded high bonuses compared to other schemes that included PFP. Bonus payments were around 10% of

the budget and providers also received up to 2% of the budget to support infrastructure, i.e., electronic medical records. Among the barriers, anecdotal evidence suggested that the mandatory participation in two-sided risk contracts made some provider groups refrain from joining the AQC programme. In comparison, the MSSP allowed ACOs to choose their risk sharing arrangement.

4. Discussion

This study aimed to identify financial incentives that have been used to promote integration of care across different types of providers for patients with common chronic conditions. We identified four such incentive types: bundled payments, PFC, PFP, and shared savings. Our review suggests that each of the four financial incentives may facilitate the integration of care, but their (cost-)effectiveness depends on several implementation factors, and it may take years before effects can be measured. The limited evidence base limits the extent to which we can draw solid conclusions and calls for further studies of the four incentive types.

4.1. Contribution of the review and comparison with the literature

The most convincing evidence for financial incentives improving quality of care and generating cost reductions was found for shared savings models, where favourable results were obtained in the largest number of studies using evaluation methods that made causal interpretations possible (notably difference-in-differences with matching). Focusing on patients with common chronic conditions, we found overall improvements in quality indicators and reductions in healthcare expenditure. These findings align with Kaufman et al. [6] who report outcomes of shared savings models for all patients treated in ACOs and not just those with common chronic conditions. Our findings also align with Cattel & Eijkenaar [53] who report evidence for reduced healthcare expenditure and improved quality of care in shared savings settings.

Evidence on the effectiveness of bundled-payment programmes indicates that when the focus is hospital care, expenditure decreases [24, 26], but when it is primary care, expenditure increases [30]. Early evidence based on interviews with stakeholders in Tsiachristas et al. [13] suggests that the DBPP (where focus is primary care) did not decrease healthcare expenditure, but it appears to improve providers' cooperation and the quality of chronic care.

We found only one programme for, respectively, the effectiveness of PFP and PFC to integrate care for patients with common chronic conditions, and the evidence from both did show a decrease in healthcare expenditure and improvement in care integration. However, several literature reviews outside the domain of integrated care conclude that PFP schemes yield mixed results in terms of effectiveness [49,54,55]. PFC in contrast have demonstrated promising results in healthcare home models [56–58].

4.2. Lessons for evidence-based design

When seeking to draw lessons from cross-country evidence, it is important to consider whether the evidence presented is likely context dependent, or whether it can be expected to be generalisable to other health system which may have different configurations. Our review includes only one programme for PFC and PFP, which means that there are no coherence issues in terms of comparing the outcomes of these payment types in our review. Our findings for shared savings are based on three different programmes, including programmes that cover different populations (Medicare population vs Insurance programmes). Our findings for bundled payments are also based on two quite different programmes. The DBPP is mainly targeted at primary care physicians, while BPCI programme is targeted at secondary care (hospitals).

The studies identified in our review were all from either the Netherlands or the U.S. meaning that the evidence spans two types of

healthcare systems. The Dutch healthcare system is characterised by universal social health insurance [59,60] while the U.S. is characterised by a mix of public and private, for-profit and non-profit insurer and healthcare providers [61,62]. The studies from the Netherlands are all related to the Dutch bundled payment scheme which is a nationwide programme that applies to all health insurers and therefore potentially affects all patients with the target conditions. The programmes identified in the U.S. are either launched by the U.S. Medicare and therefore applies to the Medicare populations of 65+ year-olds (including the BPCI), or by managed care or insurer groups (such as Cigna, Aetna or CalPERS) in which case, the programmes apply to the patient populations covered by these groups. Differences across healthcare systems could impact provider responses to financial incentives used to promote integration of care. We suggest that the key dimensions to consider regarding the transferability of the lessons are whether providers face similar incentives to respond to financial incentives (i.e. whether they are profit or non-profit) and whether providers assume the same level of responsibility for the provision of health care and the associated costs.

Overall, when reviewing the effectiveness of financial incentives for integrated care, we found that programme effects take time to mature. Thus, early results may not be fully representative of the programme effects. For example, bundled payments have not improved health outcomes and expenditures or have shown only some promising results up to a year after implementation [22,23,27,29]. However, five years after the initial implementation, the DBPP increased healthcare expenditure [30], while BPCI reduced healthcare expenditure three years after implementation [26]. These findings suggest that long-term studies of effectiveness are important to accurately capture the impact of financial incentives for integrated care as results appear to take time to materialise.

The identified studies point to several facilitators and barriers for the successful implementation of the programmes with financial incentives to integrated care. Appendix 4 summarise these lessons, which were stated in the identified studies. Healthcare providers work in a complex environment with strict protocols and guidelines to follow and high patient expectations. This suggest that programmes aiming to facilitate care integration should be easy to understand and implement, which in turn means that an effective communication strategy should be in place covering the period well before beginning the implementation and continuing hereafter. For example, as providers may perceive the new programme only as a new way for funders to charge for care [27] it is imperative to communicate to providers that the programme aims to achieve improvement in quality indicators while keeping expenditure growth under control across providers.

The literature also suggests that a financial incentives programme for integrated care should ensure that an entire infrastructure is in place for successful implementation. This infrastructure may include IT equipment and systems (both hardware and software), communication channels, systems for information sharing, and suggestions for organisational restructuring that can accommodate the integration of care. Implementing up-to-date information and communication technologies (ICT) and integrated patient databases help providers monitor their performances and share information both between insurers and providers and within provider groups [29]. The administrative burden could also be lessened by up to date ICT systems [27].

The scope of the programme for integrated care is another important characteristic for successful implementation. Evidence from programmes using bundled payments suggest that focusing on a limited number of episodes or a few treatments may fail to achieve care integration. Broad-spectrum services covering multiple episodes across related conditions and over an extended period appears to have better chances of achieving integration of care, improving healthcare outcomes, and decreasing healthcare expenditure.

4.3. Study limitations and future research

We acknowledge several limitations of our study. By conducting a scoping review rather than a systematic review, we chose a more explorative approach to synthesising the literature. We took this approach due to the expected diversity of the programmes used for promoting integrated care and the diversity in targeted outcomes, meaning that we could not summarise programme effects in a few single measures as is standard in systematic reviews. As pointed out by Goodwin [63], despite efforts to find a common definition of the concept of integrated care, the practical definition of care integration should be context specific, which means there could be variation in how the concept is understood across the interventions studied here. Still, because our inclusion criteria require incentives to stimulate integration across different provider types, we believe the payment incentives analysed here apply the concept of care integration consistently.

While we did not explicitly rate the quality of the evidence, we have presented the different study designs throughout the review, allowing readers to form their own conclusions about the robustness of the results. None of the included studies used randomised controlled trials (RCTs) as an evaluation method. The lack of RCTs could partly be due to the complex nature of integrated care as it impacts several providers. For this reason, many studies used quasi-experimental evaluation designs such as difference-in-differences, interrupted time series etc., while others used qualitative methods. The quasi-experimental study design allowed us to uncover the effectiveness of the programmes, whereas the qualitative studies supplemented with important insights from insurers, providers, and patients.

All the identified programmes for integrated care focused on primary and secondary care and not on the collaboration between healthcare and social care providers (e.g., nursing homes and home care and rehabilitation) even though it is playing an increasingly important role in the care for people living with chronic disease.

We find a limited number of studies exploring the (cost-)effectiveness of financial incentives for integrated care, despite the long-standing presence of the integrated care concept. We acknowledge that several programmes for integrated care are currently being implemented internationally, and the evidence base is likely to expand in the years to come, provided the new schemes are being evaluated. By construction, our review is limited to schemes that have been accompanied by financial incentives designed to incentivise integrated care for patients with common chronic conditions (asthma, COPD, chronic/congestive heart failure, diabetes mellitus, and hypertension) and for which peer-reviewed empirical evidence exists. The relatively limited number of included studies suggests that more evidence on causal effects is warranted focusing on both the effectiveness and the cost-effectiveness of the financial incentives for integrated care as well as evidence of barriers and facilitators to their successful implementation. We acknowledge that the lack of such evidence may be due to the complex nature of these programmes, lack of data availability, or that sufficient time has not yet passed for these programmes to be evaluated. In addition, future research should aim to ensure transparency, reproducibility and allow for future synthesis in reviews and meta-analyses.

By focusing on financial incentives, this review primarily target only one type of healthcare professionals' motivation, namely financial motivation. In future studies on financial incentives to promote care integration, it could be relevant to factor in recent findings that healthcare providers also are driven by non-financial types of motivation such as intrinsic motivation, user orientation, and public service motivation [64–69].

5. Conclusion

This review aimed to investigate financial incentives used to promote integrated care across different types of providers for patients with common chronic conditions. We identified four types of financial

incentives, i.e., bundled payments, PFC, PFP, and shared savings. Our findings suggest that all four types of financial incentives may promote integrated care but not in all contexts and settings. Shared savings appears to be the most promising incentive type for promoting care integration in a cost-effective way with the largest number of favourable studies employing evaluation methods that allow causal interpretations. However, the scarcity of evidence makes it hard to draw firm conclusions that are transferable to other contexts. We also found evidence that it may take years before financial incentives for integration of care are measurably effective. We identified several facilitators and barriers for their effectiveness, and key learning points are that programmes aiming to facilitate integration of care should be well-communicated and easy to understand and implement by providers, and that it requires building an infrastructure for care integration including IT support, training, and guidelines. Lacking electronic medical records, communication channels, clinical guidelines constitute potential barriers for the successful implementation of financial incentives for care integration. However, the sparse evidence base limits the extent to which we can draw solid conclusions and calls for further studies of the (cost)-effectiveness of these financial incentives.

CRedit authorship contribution statement

Dimitar Yordanov: Conceptualization, Formal analysis, Investigation, Methodology, Project administration, Writing – original draft, Writing – review & editing. **Anne Sophie Oxholm:** Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Writing – original draft, Writing – review & editing. **Thim Prætorius:** Conceptualization, Funding acquisition, Methodology, Writing – review & editing. **Søren Rud Kristensen:** Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Writing – original draft, Writing – review & editing.

Declaration of competing interest

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Supplementary materials

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