Value based health care reimbursement in high performance sport

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Executive Summary

Background

Value based health care reimbursement models have been proposed as an alternative to traditional fee-for-service arrangements, that attempt to better align the incentive structure faced by health care providers with the outcomes of value to patients and society. This project aimed to provide an overview of the main types of value-based reimbursement models, synthesise the available evidence around the effectiveness of these models, and investigate key stakeholder perceptions and experiences of different reimbursement models within the Australian high performance sport setting.

Methods

A broad review of the literature was performed to produce a narrative description of the types of value-based reimbursement models that have been proposed, along with their respective advantages and disadvantages. A systematic umbrella review was then conducted to examine the current evidence base around the effectiveness of value-based reimbursement models in settings of relevance to high performance sport. The umbrella review involved searching PubMed, Embase and SCOPUS databases for published systematic reviews or meta-analyses since 1st January 2011. To maintain relevance to the high-performance sport setting, articles were excluded if they focused exclusively on health care within tertiary, acute, specialist outpatient, maternal/child health and mental health settings, or if they reported exclusively on low to middle income countries.

In-depth semi-structured focus group discussions and interviews with key stakeholders including health care providers, health managers and sports managers within the Australian high performance sport setting were conducted. Purposeful sampling of participants was conducted so that a range of perspectives could be obtained. Focus groups and interviews were jointly facilitated by two interviewers between November and December 2021. A semi-structured interview guide was developed using an established implementation framework, with key themes deductively mapped to the framework across the domains of the innovation, inner context and outer context.

Results

While several forms of value-based reimbursement models have been implemented and evaluated across a range of clinical settings, there is limited evidence available to inform an "optimal" model. This is unsurprising due to the complex nature of health systems and the context-specific nature of strategies required to address challenges across different clinical settings or patient cohorts. In learning from this body evidence, high-performance sport should be aware of the potential positive and negative outcomes of each model, and the widely acknowledged need to account for important contextual barriers and enablers in designing and implementing appropriate reimbursement models.

A total of 16 stakeholders participated in the focus group discussions and interviews. Findings from these discussions were valuable in highlighting some of the important barriers and enablers that need to be considered, specific to the Australian high performance sport setting. Reflecting the experiences of the participants, these discussions focussed largely on the differences between fee-for-service models and salary-based "embedded" provider models.

There was a general consensus among participants that embedded models had several key advantages, including the potential for more proactive models of care, enhanced inter-disciplinary collaboration, increased provider autonomy and the ability for providers to have a deeper understanding of the relevant context and how their role aligns with the broader set of priorities for an athlete and the organisation. However, potential drawbacks of embedded models were also noted. Specific barriers to the success of these models included a lack of provider capacity to implement proactive models of care if their expected workload did not allow for this, as well as the challenges associated with attracting high calibre providers when full-time salary rates were substantially less than those available in professional sports or in private practice.

Wider contextual barriers and enablers were also highlighted within the focus groups. Common themes included the challenges around providers being able to demonstrate and quantify the value of their work under embedded models, and the potential for high-level decision making to occur without adequate consultation or engagement with relevant expertise. Key inner and outer context facilitators included the availability of additional funding, the role of internal advocates, a focus on individual athlete performance goals and the use of data-based approaches to drive better outcomes.

Conclusions

This report highlights the complex interplay of factors that may influence both health and performance outcomes under different reimbursement models. It is recommended that the design and implementation of these models is informed by an understanding of the evidence base, as well as wide and meaningful consultation with key stakeholders within the organisation.

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Introduction

Health care expenditure has been increasing at unsustainable rates in Australia and globally, driven by ageing populations, an increasing burden of chronic disease and ongoing advances in medical technologies. Within sporting contexts, many organisations are unable to expand their fiscal positions to manage this increasing expenditure, or are unable to meet the need within their current position. Public health settings have increasingly adopted a value-based health care approach, as a means of containing costs without compromising patient outcomes (1). This approach aims to maximise the potential health benefits that can be gained from an available pool of resources. A focus on health technology assessment has been central to this movement, where health care funders limit reimbursement to items where evidence has demonstrated safety, efficacy and cost-effectiveness (2, 3). In Australia, this process involves expert bodies such as the Medical Services Advisory Committee, Pharmaceutical Benefits Advisory Committee and the Independent Hospital Pricing Authority who are tasked with making recommendations about the types and prices of medical procedures, pharmaceuticals and hospital services to be reimbursed with public funds.

In addition to the role of health technology assessment, there has been an increasing interest in how the processes by which health care is funded may also contribute to achieving value-based care (4). A key concern is that traditional fee-for-service reimbursement systems in health care are structured in a way that rewards volume, as opposed to patient outcomes (5). Further within sporting contexts, the role of interdisciplinary teams in health and performance functions within athletic campaigns has been prioritised, with fee-for-service systems providing an implementation challenge to their uptake (6).

Over the past two decades, a number of alternative funding models for health care have been described and implemented (7). These alternative models aim to adjust the incentive structure faced by health care providers so that financial reimbursement is more closely aligned to the outcomes of value to patients and society. The literature around the effectiveness of these models has expanded rapidly. However, the evidence remains fragmented and relatively weak. A large number of systematic reviews have been published, but these have focussed on specific types of payment models, clinical settings or health systems (8). It has been recognised that the context in which payment reform is introduced is likely to have an important impact on the magnitude of response (9). It is therefore important that policy makers focus on designing schemes that are appropriate and fit for purpose.

The high-performance sport setting is unique in that health care providers service a typically young and healthy cohort where athletic performance may be prioritised above traditional health outcomes such as morbidity and mortality. In this setting, salugenic approaches to health are employed which aim to optimise the health of an athlete in parallel to the maintenance of general health and avoidance of injury and illness. This setting presents a valuable opportunity for payment reform that shifts away from a focus on rewarding activity, and instead incentivises prevention and wellbeing.

The aims of this report are to: (1) provide an overview of value-based reimbursement models for health care providers; (2) to synthesise the available evidence of effectiveness in settings that have potential applicability to high performance sport; and (3) to investigate key stakeholder perceptions and experiences of these models within high performance sport

settings. This document is structured in three parts that address each of these aims respectively. Part 1 of this report provides a narrative review of the main forms of value-based reimbursement, along with a theoretical analysis of their potential advantages and disadvantages. Part 2 reports on the methods and findings of an umbrella review of value-based reimbursement models. The aim of the umbrella review is to address questions around the effectiveness of these models, the factors that may influence their success, and the presence and extent of unintended consequences as it relates to high-performance sport setting aiming to optimise athlete health and performance. Part 3 outlines the methods and findings of a qualitative study investigating the experiences and perceptions of health care providers and managers in working under different types of reimbursement models within high performance sport environments.

Part 1: An overview of healthcare reimbursement models

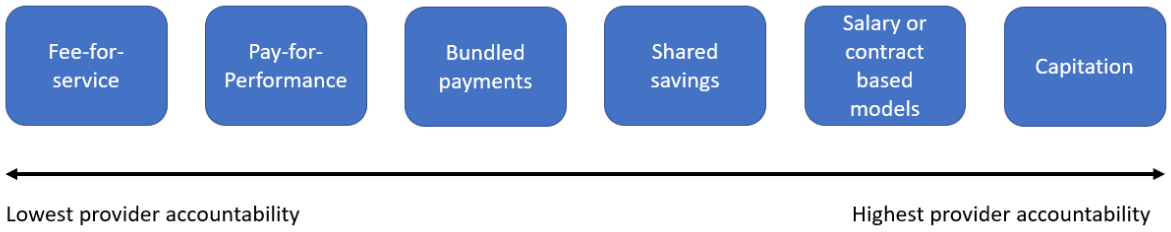
Value-based reimbursement models come in many forms. A key feature of these models is a shift in economic risk from the health care funder to the health care provider (10). However, the scope and extent of financial accountability between alternative models can vary over a broad spectrum. At one end of the spectrum is the traditional fee-for-service model, where providers are reimbursed for each distinct service provided. At the opposite end are global payments, commonly referred to as capitation models, where providers are reimbursed on a payment-per-person plan, assuming full accountability for the types and volume of services required. These capitation models may involve one physician managing up to several thousand individual patients, depending on the clinical setting and scheme (11).

Capitation models emerged in the US in the mid to late 1990s in response to skyrocketing health care costs. They rapidly increased in prominence and by 1999 approximately one third of US physicians were on capitation contracts, which accounted for an average of 21% of their total revenues (12). However, the success of these models was short lived and they were ultimately abandoned. Key lessons learned from the US experiment with capitation have been outlined by Frakt and Mayes (12). In shifting the financial risk of health care costs from funders to providers, capitation forced providers to manage their own financial risk. Relatively smaller health care organizations were unable to adequately spread their risk over enough patients, which threatened their viability and the quality of care they provided. Provider groups were therefore encouraged to consolidate, so that risk could be spread more evenly over larger patient numbers. However, the process of consolidation in turn shifted the balance of power from funders (who were largely private insurers) back to the providers. Large groups of providers were then able negotiate better contracting terms, including higher payments and often, the departure from capitation contracts entirely.

Frakt and Mayes suggest that lessons from the US experience with capitation indicate that there may be a "sweet spot" for value-based reimbursement somewhere in between the extremes of fee-for-service and capitation models (12). However, it not yet clear where this sweet spot lies and how to best move health systems towards achieving this.

Newer models of provider reimbursement have emerged over the past two decades that attempt to reconcile the objective of incentivising value-based care, without burdening providers with a level of financial exposure too great to manage. These models can be conceptualised on a spectrum from lowest to highest levels of provider accountability in achieving value-based care. The most common forms of value-based reimbursement models are outlined in Figure 1 and described below. Table 1 summarises the key features along with potential advantages and disadvantages of each model.

Figure 1 Spectrum of value-based reimbursement models based on level of provider accountability



Fee-for-service

Fee-for-service arrangements are the most common method of paying for health services. Under this model, providers receive reimbursement for each health service they provide. Their only financial risk relates to their ability to deliver the services at or below the pre-determined reimbursement rate. The main criticism of this model is that incentive structure is based around the volume of services provided, as opposed to their value. This may lead to over-servicing, use of low-value care options, and fragmented or 'siloed' provision of care (5).

Pay-for-performance

Pay-for-performance schemes typically supplement an underlying payment model, most often in the form of a bonus payment on top of a fee-for service-model. These schemes provide explicit financial incentives for providers that achieve pre-defined measures of quality or performance. The aim is to incentivise outcomes, rather than activity. However, these models are not designed to address the major underlying disincentive of the fee-for-service system, in that there are no provisions to contain costs, restrain from low-value care options or prevent over-servicing.

Bundled payments

Under bundled payment arrangements, providers receive a fixed, lump sum payment for a discrete episode of care for a given patient. Performance incentives are commonly included within these models in addition to the bundled payment (13). Providers operating under these types of reimbursement models assume an additional level of financial accountability, for the number and types of services they deliver within an episode of care. In this sense, bundled payments inherently discourage providers from performing unnecessary or low-value care activities within a given episode. They allow providers flexibility to decide on the optimal type of services that should be provided, rather than being restricted to more rigid item lists of authorised services as is common under fee-for-service models. When the services of multiple providers are covered under the same episode of care payment, this may also lead to enhanced care coordination.

It has been suggested that bundled payments are best suited for surgical procedures like coronary artery bypass grafting, in which there is a discrete beginning and end of an episode

(13). In areas such as primary care or chronic disease management, there may be less clearly defined boundaries that can present challenges for the design and implementation of these models. Other criticisms of bundled payments relate to concerns that some services may denied to patients for the sake of additional savings (14). This type of reimbursement model may also lead to 'cherry-picking' behaviour where providers select patients who they believe will be less complex or costly to treat (15). Additionally, while providers are incentivised to reduce costs within an episode of care, there are no incentives for them to reduce the overall number of episodes of care provided.

Shared savings/risks

Shared savings models allow providers earn bonuses based on how the total fee-for-service charges fit the population's treatments over a year compare with historical (or benchmarked) charges (16). Shared risk models further extend a provider's financial risk by incorporating a financial penalty when the benchmark cost is exceeded. These models operate from an assumption that providers are over-servicing, and may penalise providers who are already providing efficient and high-value care (10). As with bundled payments, shared savings/risks models may also be subject to cherry-picking and other gaming behaviours, for example if providers are incentivised to inflate costs over the benchmarking period so that savings may be earned in the subsequent period (17).

Salary or contract-based models

Salary based models involve a health provider being engaged as an employee, either full time or part time, of an organisation. In addition to receiving a regular base income, these arrangements include additional benefits such as leave entitlements, superannuation and depending on individual agreements may also include allowances for overtime pay rates. In Australia, it is common for public hospital clinicians to be engaged on a salary-based arrangement. Within high performance sport settings, these salary-based providers are often referred to as being "embedded" providers within an organisation. While providers do not experience a direct financial risk associated with service provision in these models, they are largely accountable for the nature and volume of services provided, with a high level of autonomy over the models of care that are implemented.

An alternative form of these models may occur when providers are engaged by an organisation as a regular contractor on an agreed daily rate or using some other clearly defined measure of service provision and access. Within high performance sport settings, these have been termed "contract-for-service" arrangements in some instances. While individual agreements may differ, providers engaged under these types of arrangements are accountable for meeting the organisation's requirements within the agreed upon funding. The financial risk to the provider may be higher than in salary-based models, as it is typically easier for contracted agreements to be terminated, relative to salary-based staff who have more administrative and legal protections in place.

Capitation

Under capitation models, provider reimbursement is entirely separate to the type and volume of services provided. While there are a number of ways in which capitation models can be administered, they are distinguished by three key features:

i) Payment is tied to a defined patient population (as opposed to the services provided)
ii) Care is paid at a pre-determined rate, either in advance or prospectively
iii) The provider assumes financial risk when expenditures exceed payments

Capitation models aim to overcome the volume-based disincentives associated with fee-for-service and bundled payment models by controlling both the number of episodes of care, as well as the cost of individual episodes (5). In this sense, these models encourage and reward providers for keeping patients as healthy as possible through preventive care.

Some of the ways in which capitation models have been administered are described below:

Payment-per-person: Providers receive a fixed payment for each patient included under their care. Payment is based on the estimated costs of providing a range of predefined services to a certain number and type of patients, regardless of actual services provided to each individual.

Payment-per-population: Providers are accountable for service-provision for all patients within a particular geographic area or health service region and receive payment that reflects a per-capita cost of service delivery.

Blended systems

Blended models incorporate elements from two or more of the above reimbursement schemes. These models seek to overcome the disadvantages associated with models falling at end of the accountability spectrum. Common forms of blended models include blended fee-for-service/capitation (18), and blended capitation/pay-for-performance (19). Broadly, high-performance sport (Olympic and Paralympic Sport) in Australia is a blended model of fee-for-service and salary or contractor-based models.

Type of model	Description	Incentivises high quality care	Incentivises lower cost care	Incentivises prevention	Potential advantages	Potential Disadvantages
Fee for service	Providers are reimbursed separately for each distinct service provided	X	X	X	- Simple to administer and enforce - Itemised billing - Ability to choose provider(s) - No or limited management required of staff to the sporting organisation - No on-costs of employment to the sporting organisation (e.g. leave loading, superannuation, long-service leave) - Higher control on what services are funded	- May encourage over-servicing - Can lead to fragmented/ siloed care - Lack of focus on patient experience - No or limited time allowed for coordination of care - No incentives for prevention - Practitioners typically function independently rather than as a team - Limited ability to design and implement prevention programs - Less freedom of intervention choice for the practitioner
Pay-for-performance	Providers are financially rewarded for reaching key quality or performance benchmarks	√	X	X	- Financially incentivises positive patient outcomes - Demonstrates commitment to evidence-based health care - Transparent rewards process (at least to the providers, sometimes also to patients)	- No incentives to reduce unnecessary or low-value services or contain costs - Can disincentive providers from seeing patients with non-targeted conditions

					- Can be used to focus attention on underserved or high-risk groups - May provide an incentive for health care to be aligned to organisational goals	- Complex to establish and agree on evidence-based quality measures - Can be difficult to measure outcomes in complex cases
Bundled payments	Providers receive a fixed, lump sum payment for a discrete episode of care for a given patient. Performance incentives are also commonly included in these models.	X / √ (depending on inclusion and scope of performance incentives)	√/ X (contains cost within episodes, but does not contain no. of episodes)	X	- Providers are discouraged from performing unnecessary or low-value procedures - Strong incentive to avoid complications - Provider has flexibility to determine which services are offered to achieve the desired outcome	- Difficult to define discrete episodes of care in some cases - May encourage unnecessary episodes of care - Susceptible to gaming behaviours - Difficult in sporting context to calculate what a bundled payment should be
Shared savings/risks	Providers earn bonuses and/or penalties based on spending below a predetermined benchmark over a period (typically contingent on meeting quality targets)	X / √ (depending on inclusion and scope of performance incentives)	√	X	- Providers are discouraged from performing unnecessary or low-value procedures - Benchmarks can be determined and aligned to organisation strategy - Incentivises activity towards health long-term health outcomes if identified in benchmarks (e.g. low recurrence rates of injuries)	- Up-front costs associated with developing the health IT and quality measurement infrastructure needed to reduce healthcare costs. - Assumes that providers are overspending and could penalize those already performing well

						- May encourage 'cherry-picking' and other gaming behaviours - May not be sustainable after initial savings have been realised - May not account for the fluctuation in injury rates within sports each season due to external events (rule changes, weather etc)
Organisational salary or contract-based provider engagement models	Providers are reimbursed based on health outcomes, regardless of the volume and type of service'	√	√	√	- Health services are planned to meet the population risk, needs and priorities - No incentives to low-value care as the practitioner gets paid the same - Practitioners have one 'boss', reduced conflict between the sporting organisations goals and the healthcare providers/company goals - Set salary/wage rather than market consultation fees	- Need to manage staff performance - Staff on-costs need to be considered e.g. superannuation, leave loading, backfill - Staff usually paid in salary, which may lead to complacency - No incentive for performance typically - Balance required for generalist and specialist staff with specialist typically being outside the in-house service requiring a hybrid model to

					- Performance reviews can be aligned to health outcomes not volume of services	achieve best outcomes for the patient - Budget required may exceed ability - Government organisations may be limited to 'Full-time equivalent' caps imposed by government policy
Capitation	Providers are reimbursed on a per-person plan, regardless of the volume of services provided	√	√	√	- Incentivises providers to keep patients as healthy as possible through preventive care - Incentive to keep costs per patient low - Encourages population coverage by incentivising providers to take on more patients	- Providers are at increased financial risk which may not be practical to manage - Can be complex to establish and enforce - May lead to low quality, particularly through under provision of care - May encourage providers to select the healthiest patients

Part 2: An umbrella review of the effectiveness of value-based reimbursement models with applicability to high performance sport

Background

The past two decades have seen extensive reporting on the empirical effects of value-based payment reform. This had been driven by the implementation of two landmark healthcare policies in the UK and US. In 2004, the UK National Health Service introduced the 'Quality and Outcomes Framework', a pay-for-performance model of reimbursement for general practitioners (GPs) which was the largest of its kind internationally (9). The framework was intended to improve the quality of general practice and was part of an effort to address the shortage of GPs. While participation in the program was voluntary, the level of financial incentives on offer meant that almost all GPs participated. A second influential policy was the introduction of the Affordable Care Act (ACA) in the United States in March 2010. One of the core provisions within the ACA was focussed on shifting healthcare reimbursement systems from being volume-based to value-based. This led to the rapid implementation of healthcare funding reform across the US with commonly adopted models including pay-for-performance, shared savings and bundled payments (20, 21).

Reflecting the surge of studies reporting on observed impacts of value-based reimbursement models since the turn of the 21st century, a large number of review papers have been published over the past decade in an attempt to synthesise the available evidence. For the purpose of this review, it was therefore determined that an umbrella review (or a 'review of systematic reviews') would be the most appropriate method to appraise the current state of the evidence in this field. Umbrella reviews are an emerging method for providing decision makers in healthcare with a clear understanding of a broad topic area (22). They involve the synthesis of existing review papers in order to provide a wide-ranging and comprehensive summary of the current state of evidence. Umbrella reviews have been proposed as being well suited to addressing questions of broad scope, when evidence is required rapidly to inform a new policy or procedure, and when existing research syntheses are available (22).

Methods

The objective of this umbrella review was to summarise the systematic reviews and meta-analyses that have reported on the effectiveness of value-based reimbursement models in settings with potential applicability to high performance sport. A literature search was conducted between 15th August and 8th September 2021, and included 3 databases: PubMed, Embase and SCOPUS. The search was limited to reviews published since 1st January 2011, to ensure the included studies were reflective of more recent developments in value-based reimbursement internationally.

The search string included a range of terms that have been used to describe value-based reimbursement models, including: alternative payment; alternative reimbursement; value-

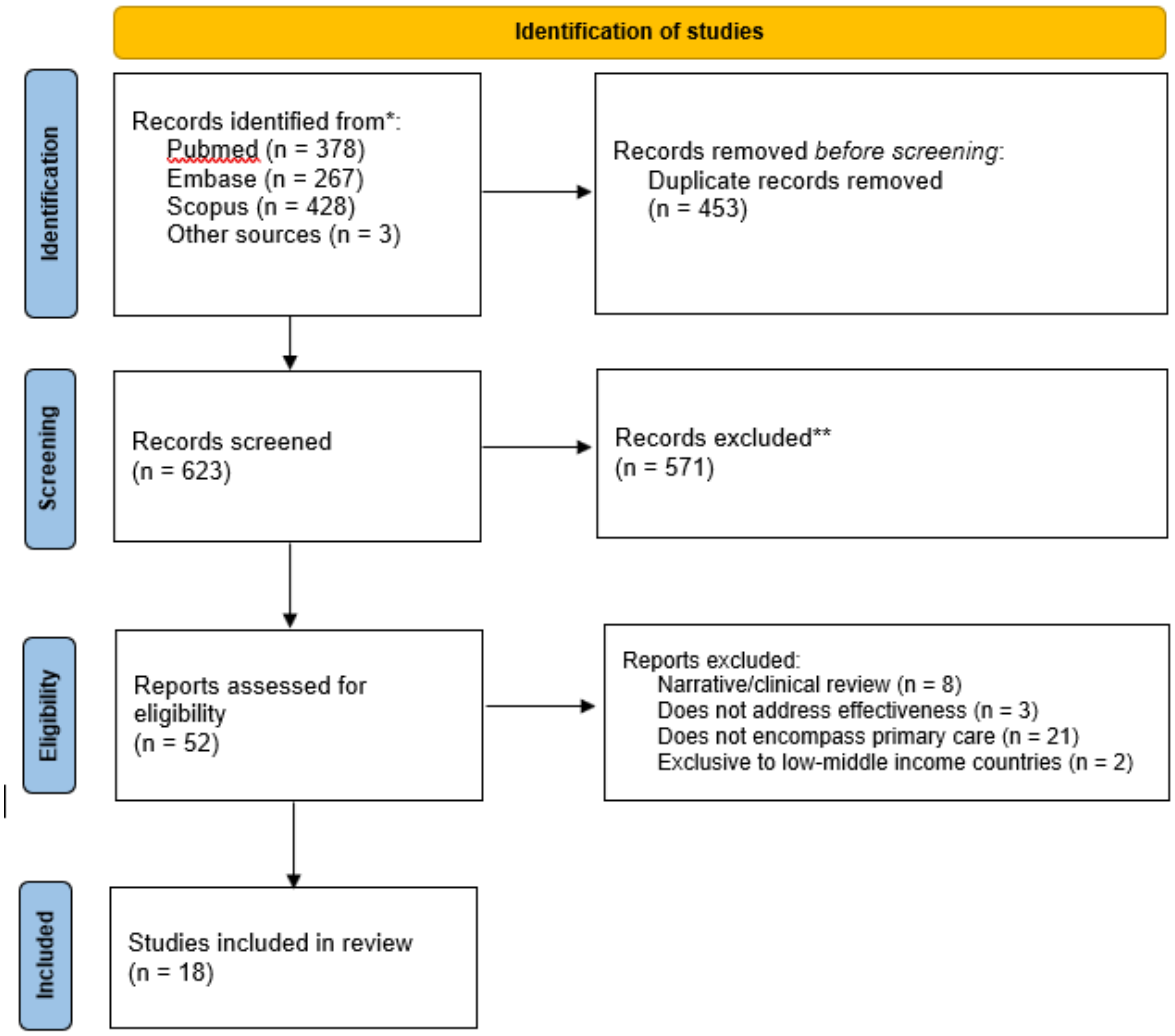
based payment; value-based reimbursement; outcome-based payment; capitation; pay for performance; bundled payments; and provider payment reform. These terms were combined with search terms to indicate the health care setting in a broad sense, including: health; healthcare; medical and prevent*. Databases filters were used to limit articles to those classified as reviews.

Articles were included if they were English-language systematic reviews, meta-analyses or meta-syntheses that examined empirical evidence around the effectiveness of value-based reimbursement models in health care. Articles that focussed exclusively on health care within tertiary, acute, specialist outpatient, maternal/child health and mental health settings were excluded. Articles that reported exclusively on low to middle income countries were also excluded to maximise comparative validity, given significant variations in health systems and funding structures in these settings.

Search outcomes

The initial database search yielded 620 articles after duplicates were removed, with a further three articles identified from hand-searching. Screening of title and abstract excluded 571 articles, with full text review performed on 52 papers. After excluding 8 papers that were not systematic reviews and three papers that did not address effectiveness of value-based reimbursement as an outcome, an additional 23 papers were excluded due to their setting not encompassing primary care and/or high-income country settings. A summary of these excluded papers is included in Appendix 1. A final 18 papers met the criteria for inclusion in this umbrella review (Figure 2).

Figure 2 PRISMA Flow chart



Results

A summary of the characteristics and key findings of the included studies is provided in Table 2. Of the 18 articles included, there were 15 were systematic reviews (23-37), one systematic review of systematic reviews (8), and two meta-analyses (38, 39). Almost all articles included evidence that was international in scope, with the exception of one paper that focussed exclusively on the UK Quality and Outcomes Framework (30), one that was limited to single payer health systems (31) and one that was limited to evidence from Canada (25). However, there were also some key areas of variation across included articles. While nine articles focussed exclusively on evidence from primary care settings (including dental services) (23-25, 27, 30, 34-36), the remaining nine articles were broader in scope. The number of included studies within each review ranged from 2 (24) to 116 (39). The total number of studies included across the 18 reviews was 682 without accounting for duplicates, representing an average of 38 studies per review. Just under two thirds of articles (n=11) focussed exclusively on pay-for-performance reimbursement models (8, 23, 28-34, 38, 39).

Evidence of effectiveness

The articles included in this review generally adopted a broad definition of 'effectiveness' that encompassed process outcomes (e.g., provider behaviour, screening rates), patient outcomes (e.g., morbidity and mortality), and health service outcomes (e.g., health service utilisation, equity, cost). Despite the relatively large number of published studies identified within the review articles, evidence for the effectiveness of value-based reimbursement in primary care remains weak and inconclusive. Only two of the 18 reviews reported promising findings regarding effectiveness (23, 26), with a further seven articles finding limited evidence of effectiveness (25, 28, 31, 32, 37-39). In their review on 88 articles published between 2000 to 2016, Vlaanderen et al identified that highly targeted or "narrow" payment models (e.g. financial incentives for achieving specific outcomes) generally showed positive or mixed effects on quality, but adverse effects on utilisation and cost (37). "Broad" payment models (e.g. capitation or risk-sharing arrangements) showed positive effects on quality of care, while also reducing the growth in healthcare costs. This finding was supported by the review by the 2020 review by Cattel et al which also found blended capitation/pay-for-performance models to have promising evidence to support their impact in reducing spending growth while maintaining or improving quality of care (26). The meta-regression analysis of pay-for-performance initiatives conducted in the most recently published article in this review found weak evidence to suggest that the proportion of studies finding statistically significant effects is increasing over time (39), suggesting that the evidence base is evolving relatively slowly.

Overall, there was a paucity of evidence on the economic effects of value-based reimbursement models, which was surprising given a key aim of these models is to control or reduce health care expenditure. Only one review paper focussed exclusively on economic efficiency (29), while four others included outcomes relating to cost (8, 28, 31, 37). None of these reviews were able to establish conclusive evidence to support the positive impact of value-based reimbursement models in containing healthcare costs.

Key limitations of previous studies

A common limitation identified across the included articles was the high risk of bias across included studies. Two thirds of articles (n=12) explicitly highlighted the relatively low quality of published evidence to be a limitation that impacted on the ability to draw strong conclusions (8, 23-25, 29, 31, 32, 34, 35, 37-39). Reasons for quality issues included: poor study design, in particular the lack of randomised or experimental studies (32, 37, 38); poor methodological quality (29); poor reporting standards including a lack of adequate detail (34); and the difficulty of disentangling causal effects of payment reforms in observational studies, as they are commonly introduced alongside other non-financial improvement initiatives (8, 30, 38). The meta-analysis of pay-for-performance initiatives conducted by Ogundeji et al reported that schemes evaluated using RCT and other rigorous study designs showed little or no effect, compared with positive but modest effects in studies with less rigorous designs (38). This suggests the relative effectiveness of these initiatives may potentially be over-stated in the literature more broadly.

Other limitations identified by the included articles were that the evidence largely pertains to relatively small programs (8), and is dominated by studies from the US (37). Additionally, the focus of most evaluations to date have been on short-term outcomes, with limited evidence

for impacts on long term patient outcomes including morbidity, mortality and quality of life (8). The majority of articles noted that the substantial heterogeneity across study settings, reimbursement interventions, evaluation design, methodological approaches and study outcomes limited the ability of reviews to make comparisons or generalise findings beyond their immediate setting. The meta-analysis conducted by Ogundeji et al quantified this finding, estimating that true heterogeneity accounted for 99.9% of the observed variation in study outcomes (38).

Factors found to influence success

Evidence to inform the optimal design of value-based payment reforms is limited. However, there appears to be growing consensus that the size of incentives within pay-for-performance programs is an important factor (8, 31, 38, 39). A meta-analysis by Ogundeji et al found the odds of a program showing a positive effect was three times higher for schemes with larger incentives, defined as being at least 5% of base salary or budget (38). A more recent meta-regression analysis also reported a positive, albeit smaller, positive association between the size of incentives and the proportion of effect sizes that were statistically significant at the 10% level (39). Gupta et al found that modest provider payments yield limited to negligible health benefits in patients (31). However, while larger incentives may encourage higher quality care, it necessarily involves a more substantial commitment of resources. The relative cost-effectiveness of this approach has not been established.

Two reviews reported improvements in effectiveness were also observed when incentives were paid to individuals as opposed to groups, and when there was a lower perceived risk of not earning the incentive (8, 38). The risk of not earning an incentive is minimised when the provider is confident they can reach the necessary targets and in turn receive the promised reimbursement once these have been achieved. A low risk is therefore indicated by a short time lag between verification of performance and receipt of the incentive payment; payments conditional on absolute improvement rather than relative to other providers' performance; and payments based on measures of process measures as opposed to outcome measures (38).

Gupta et al note the importance of being able to measure and monitor quality of care and patient outcomes against specific targets and goals (31). Performance metrics need to be transparent, value and consensus-driven, but not overly cumbersome. Gillam et al propose that consideration be given to improving quality from a holistic perspective, including domains such as patient experience and equity (30).

The importance of value-based reimbursement schemes being designed in collaboration with both providers (8) and health service researchers (30) is a common recommendation across included articles. Eijkennar et al propose that active participation of providers in designing the program, especially in defining, developing, and maintaining the aspects of performance to be measured, will increase the likelihood of provider support and alignment with their professional norms and values (8).

Evidence of unintended consequences

Only two of the included articles reported on evidence of the unintended consequences of value-based reimbursement models. Eijkenaar et al found some evidence of risk selection, for example through deferral of noncompliant patients or exclusion if older or more complex

patients from incentive-based programs (8). There was also some evidence of spill over effects identified in this review, where some studies reported poorer quality outcomes in conditions that were excluded from financial incentives, relative to those that were included. However, there was virtually no evidence of gaming behaviour or negative effects on providers' intrinsic motivation. This finding is supported by the Vlaanderen et al review of the UK Quality and Outcomes Framework, which concluded that the low levels of exception reporting suggested that large-scale gaming is uncommon (37). The review did note that some unexplained variations in performance scores were noticed and may be indicative of gaming behaviour by a small minority of providers.

Table 2: Summary of evidence from reviews of value-based reimbursement models encompassing settings of potential relevance to high performance sport

First author, year	Setting/ Patient cohort	Type of model(s)	Type of review	Date range	No. of included studies	Outcomes of interest	Key findings	Evidence of effectiveness
Benabbas, 2019 (23)	Primary care	Pay-for-Performance	Systematic review	Up to 2018	9	Vaccination rate	Improvements in vaccination rates were statistically significant in 8 of 9 studies.	Yes
Brocklehurst, 2013 (24)	Primary care dental services	Fee-for service, fixed salary, capitation	Systematic review	Up to 2013	2	Broad range of outcomes relating to provider behaviour, service use and patient outcomes	The two included studies were deemed to at high risk of bias, with low/very low quality of evidence for all outcomes.	Inconclusive
Carter, 2016 (25)	Canadian primary care system	Multiple	Systematic review	2000-2015	14	Health service utilization, processes of care, and physician productivity	Low quality evidence that team-based models, blended capitation models and pay-for-performance incentives led to small and sometimes non-significant improvements in processes of care.	Yes (limited)
Cattel, 2020 (26)	Non-specific	Blended capitation/ pay-for-performance	Systematic review	2000-2017	111	Impact on 'value' in a broad sense	Evaluated initiatives generally showed promising results in terms of lower spending growth with equal or improved quality. Main commonalities between successful initiatives were a strong emphasis on primary care, the use of "virtual" spending targets, and the application of risk adjustment and other risk-mitigating measures.	Yes
Conquest 2021 (27)	Dental services	Capitation and fee-for-service	Systematic review	2004-2020	10	Provider, service and patient outcomes broadly defined	Both capitation and fee-for-service have potential to impact on individual outcomes, including overtreatment in a fee-for-service system and undertreatment in a capitation system.	Inconclusive
De Bruin, 2011 (28)	Chronic disease management	Pay-for-Performance	Systematic review	2000-2010	8	Measures of healthcare quality and cost	Most studies showed positive effects of P4P on healthcare quality. None of the identified studies evaluated the effects of P4P on healthcare costs	Yes (limited)

Eijkenaar 2013 (8)	Non-specific	Pay-for-Performance	Systematic review of systematic reviews	2000-2011	22	Effects of P4P broadly defined, unintended consequences, key design features	P4P can potentially be effective and cost-effective, but the evidence is not convincing. There is some evidence of unintended consequences, including spillover effects on unincentivized care.	Inconclusive
Emmert, 2012 (29)	Non-specific	Pay-for-Performance	Systematic review	2000-2010	9	Economic efficiency of P4P based on costs and consequences from comparative evaluations	Economic efficiency of P4P could not be demonstrated. Partial economic evaluations showed mixed results, but study limitations mitigate their significance. Ranges of costs and consequences were typically narrow, and programs differed considerably in design. Methodological quality of included studies was relatively low.	Inconclusive
Gillam, 2012 (30)	Primary care under the UK Quality and Outcomes Framework	Pay-for-Performance	Systematic review	2004-2011	94	Effectiveness, efficiency, equity, patient experience	Observed improvements in quality of care for chronic diseases in the framework were modest, and the impact on costs, professional behaviour, and patient experience was uncertain.	Inconclusive
Gupta 2019 (31)	Diabetes management in single-payer health systems	Pay-for-Performance	Systematic review	2000-2018	10	Patient morbidity, avoidable hospitalization, premature death, and healthcare costs	P4P can result in reduced risk of mortality over the longer term, when linked to performance metrics. In studies where P4P was not linked to specific patient-oriented objectives, there was little or mixed evidence of positive health impacts.	Yes (limited)
Houle 2012 (32)	Non-specific	Pay-for-Performance	Systematic review	Up to 2012	30	Health service use, quality of care measures	Pay-for-Performance modestly improved preventive activities, such as immunisation rates, but there was little evidence that it improved other outcomes.	Yes (limited)
Mauro 2019 (33)	Breast, cervical and colorectal cancer screening	Pay-for-Performance	Systematic review	Up to 2018	18	Screening rates for breast, cervical and colorectal cancer	Most of studies showed partial or no effects of financial incentives on breast and cervical cancer screening delivery rates. Few positive or partial effects were found regarding colorectal cancer screening.	Inconclusive

Ogundeji 2016 (38)	Non-specific	Pay-for-Performance	Meta-analysis	Up to 2016	96	Effectiveness outcome as defined in original studies. Included both outcome and process measures.	Although 70% of the outcome variables measured showed a positive effect, the overall size of the effects of P4P schemes was very modest. Schemes evaluated using randomized controlled trials and other rigorous designs showed little or no effect. Larger incentives and reducing the risk of non-payment increases the likelihood of a positive effect and the size of that effect. Payments to individuals are more effective than to groups, but this was not statistically significant.	Yes (limited)
Scott 2011 (34)	Primary care	Pay-for-Performance	Systematic review	2000-2009	7	Quality of care measures encompassing clinical and physiological measures, clinical behaviours, and patient reported outcomes and experiences	Six of the seven included studies showed positive but modest effects on a minority of the measures of quality of care. Poor study design led to substantial risk of bias in most studies.	Inconclusive
Tao 2016 (35)	Primary care	Multiple	Systematic review	1980-2013	27	Equity in access and quality of primary care	Reimbursement systems were found to have limited effect on socioeconomic and racial inequity in access, utilization and quality of primary care. Capitation may have a more beneficial impact on inequity in access to primary care and number of ambulatory care sensitive admissions than fee-for-service, but performed worse in patient satisfaction.	Inconclusive
Vahidi 2013 (36)	Primary care	Multiple	Systematic review	Up to 2011	11	Quantity of service provision and referral rate behaviour	Salary payment models were associated with lower service provision and higher referral rates compared with fee-for-service and capitation models.	Inconclusive

Vlaanderen 2019 (37)	Non-specific	Multiple	Systematic review	2000-2016	88	Quality, utilisation and cost of care	"Narrow" payment models (e.g. financial incentives based on quality indicators) generally showed positive or mixed effects on quality, but unfavourable effects on utilisation and cost. "Broad" payment models (e.g. combination of global budgets, risk sharing, and financial incentives based on quality indicators) showed positive effects on quality of care, while reducing healthcare cost growth.	Yes (limited)
Zaresani 2021 (39)	Non-specific	Pay-for-Performance	Meta-regression analysis	2010-2018	116	Proportion of statically significant effects in each study	There was evidence of an increase in the range of countries adopting P4P schemes and weak evidence that the proportion of studies with statistically significant effects have increased. Factors hypothesized to influence the success of schemes have not changed.	Yes (limited)

P4P = Pay for performance

Discussion

This review identified a relatively large and well synthesised body of literature on the effectiveness of value-based reimbursement models in high income settings, with a total of 18 included reviews summarising a collective total of 682 individual research papers. Several reviews focussed specifically on primary care and preventive health settings, which may have some parallels with high performance sport settings where prevention of illness and injury is often an overarching goal. However, there were no reviews, or individual studies within this set of reviews, that produced evidence within a sporting environment or context.

We were unable to identify conclusive evidence to support the effectiveness of value-based reimbursement models within this review. While none of the reviews concluded that value-based models produced worse outcomes than traditional fee-for-service models, only two reviews were considered to have produced relatively strong positive findings (23, 26), with the remaining reviews either inconclusive or demonstrating limited evidence of effectiveness. There were also a wide range of different outcomes that were adopted as measures of 'effectiveness', as well as a wide range of clinical settings and patient populations, which presented challenges for making direct comparisons across studies.

It is apparent the issues around value-based reimbursement are complex where a 'one size fits all' approach is unlikely to be successful. The consideration of specific intervention components, as well as the relevant contextual factors and their interrelation, are likely to be important factors. This is highlighted in one review which outlined several key factors including organisational commitment, adequate infrastructure, adequate resourcing across both human and information technology domains, the role of internal advocates for change and providers' personal commitment to quality care (40).

Despite a large number of original studies being reported, several reviews highlighted the deficiency of high-quality studies in this area. This may also be contributing to lack of conclusive evidence and the observed variation in findings across studies. There is a need for future research that is methodologically rigorous. In addition, higher standards of reporting and publication would ensure more detailed and comprehensive reporting of research methods and results. While there is a clear need for improved quality in the conduct a reporting of studies, this needs to be balanced against practical considerations. Gold-standard study designs such as randomised controlled trials are difficult and costly to conduct and may not be practical or feasible in the context of system-level payment reform. Shrank et al argue for the importance of considering different perspectives, and recognizing that health care stakeholders differ in what types of evidence and how much evidence they need to conclude that a reform is successful for their own purposes (41). Designing evaluations to align with and build on stakeholder needs could help implementation of payment reforms, while also supporting the development of more evidence relevant to the needs of a broader range of policy makers and other key stakeholders involved in payment reform. Although evidence is limited, some studies have suggested that pay-for-performance (P4P) may have several unintended effects, underscoring the importance of ongoing monitoring and more insight in how specific design features may help in mitigating incentives for undesired behaviour. Little is known about the appropriate amount and mix of performance measures that would minimize the risk of providers focusing disproportionately on incentivized performance.

There are also concerns that an undesired effects of P4P may be the reduced intrinsic motivation of providers. To overcome this, it has been suggested that providers play an active role in the design of P4P programs (8), providing direct input in defining, developing, and maintaining the aspects of performance to be measured. This increases the likelihood of provider support and alignment with their professional norms and values (8). Qualitative studies should be used alongside evaluations of P4P schemes to monitor the impact on providers' intrinsic motivation. Additionally, this evidence base could be progressed using methods such as Discrete Choice Experiments to elicit stated preferences from providers.

Conclusion

The evidence available from public health settings is inconclusive when determining the optimal provider reimbursement model. This is unsurprising as health care is contextually bound by the society it services, the funding body of such services and the innate difficulties to study these in their entirety. Learning from this body evidence, high-performance sport should be aware of the potential positive and negative outcomes of each model and combination of models when determine 'best-fit' payment systems. Fundamental to all payment system is beginning with the outcome sought for the population the health services are targeted towards. This may then provide a lens in which each of the models can be assessed against in their ability to achieve these.

Part 3: Key stakeholder experiences and perceptions of value-based reimbursement models

Background

The aim of this study was to investigate stakeholder perceptions and experiences of the barriers and enablers to effective health service provision under different types of provider reimbursement models in high performance sport.

Methods

A qualitative study design was adopted using semi-structured focus group discussions and individual interviews conducted via videoconference using Zoom. It is anticipated that these findings may inform future planning and policy making within high performance sport in Australia and internationally.

Recruitment

Participants were purposively sampled and limited to individuals that would have a direct stake and interest in the implementation of alternative health care funding models, encompassing: 1) health providers; and 2) management and executive-level personnel. The sampling process aimed to achieve a balance of perspectives across each workshop. The targeted sample size was between 12 to 18 participants to be recruited to one of three focus groups.

Framework

A semi-structured question guide was developed based on the Exploration, Preparation, Implementation, Sustainment (EPIS) framework (42) (see Appendix 2). Consistent with the EPIS framework, questions target participants' perceptions of how innovation factors (e.g. adaptability, characteristics and fit), inner context factors (e.g. organisational characteristics, individuals, knowledge, leadership), and outer context factors (e.g. funding, policy, networking) might impact on the barriers and enablers of alternative health care reimbursement models. The interview guide was flexible, allowing the interviewer to follow up and explore relevant themes raised in the discussion.

Analysis methods

Audio and written records from the focus group discussions and interview were subject to deductive thematic analysis by using an iterative and pattern matching approach in mapping to the relevant EPIS constructs.(42, 43)

Results

Participants

A total of 16 stakeholders participated across three focus group discussions and one individual interview. Of these: six were health care providers within high performance sport settings; an additional two were the national lead providers within their respective disciplines; four were health management personnel; and four were performance management personnel. Health providers encompassed dieticians, physiotherapists, psychologists and medical doctors. Management staff included performance managers, a sports coordinator, health managers and a Chief Executive Officer.

All participants involved in the discussions had some experience across embedded or contracted for service models within the Australian high-performance setting. Several providers had worked across multiple models spanning fee for service, embedded salary-based models and contracted-for-service models. There was limited experience across the cohort with pay-for-performance, risk-sharing or bundled funding arrangements. The discussions therefore largely focussed on the key points of difference between fee for service and embedded provider models, which were perceived to be the most relevant considerations within this setting.

Several key themes emerged from the discussions; these have analysed deductively and mapped been to the corresponding EPIS domains of innovation, inner context and outer context factors.

1. The innovation

Facilitators of reimbursement models

Potential for proactive care

There was broad agreement among participants around some of the key advantages of embedded provider models, in comparison to fee for service. Participants noted the potential for these models to be more proactive in nature, with a greater focus on preventive care. The potential for financial benefits of prevention was also discussed, with several participants providing examples of instances where they believed the provision of primary prevention activities had contributed to reduced service use at a later stage. There was an acknowledgement that individual disciplines were at different stages in terms of implementing preventive approaches.

> *"When athletes have easy access to services, they will be proactive… rather than sit on issues, wait for a formalised appointment and then catch the issue too late, then there's a lot of training missed and big implications."*
>
> *Health provider*
>
> *"Mental health and nutrition are leading the way in showing how preventive care can be used to reduce the ongoing level of service provision."*

Health manager

Inter-disciplinary collaboration

The potential for embedded provider models to enhance inter-disciplinary collaboration was a dominant theme to emerge across all of the focus group discussions. It was noted that health problems in this setting, particularly as they relate to performance, are typically complex and cross multiple disciplines, meaning that collaboration is often necessary to resolve issues optimally. The importance of the distinction between multi-disciplinary and inter-disciplinary collaboration was highlighted:

> *"Instead of going around a medical room: update, update, update; its, let's look at this athlete and how are we going to get them 3% faster, stronger, whatever the performance challenge is. Put the [performance] problem in the middle and we all come together collectively to solve the problem. When I've worked in organisations who transition to truly doing that, you get huge performance gain."*
>
> *Lead health provider*

The ability for inter-disciplinary collaboration to assist with breaking down barriers between disciplines was also highlighted. Participants described the benefits of this collaboration as not only relating to the level of expertise being contributed by those in specific fields, but the nature of the process in getting people to be comfortable in hearing other views that they may not have considered, or that may be in opposition to their own view, but shared in a way that works towards finding an optimum outcome with all relevant information being considered.

> *"To break down some of those barriers you need people to trust each other and be face-to-face, and that takes time out of consulting hours, but it's incredibly valuable and you can really gain some enormous performance benefits over time with that approach."*
>
> *Sports manager*

Some participants described the flow-on effects of inter-disciplinary collaboration on athlete engagement. Specifically, athletes who observed the process of this collaboration within the context of an inter-disciplinary consultation or assessment were observed to have a greater appreciation for the complexity of treatment decisions, and the level of time, expertise and organisational resources that were behind these decisions. This, along with the potential for shared athlete-provider decision making that these opportunities afforded, in turn were perceived to have direct implications for athlete behaviour.

> *"Athletes are potentially far more readily engaged in that process going forwards when they can see the degree of effort and time and planning and communication that has gone into trying to achieve that outcome."*
>
> *Health manager*
>
> *"You get greater adherence, it increases an athlete's role and ownership of it, and confidence in the process when they understand the context."*

Health provider

The importance of collaboration across both clinical and non-clinical staff was described. Participants perceived a shift away from the belief that the role of health providers was solely to influence health, while the role of performance coaches was to focus solely on performance. There was a general recognition of the significant influence of performance coaches on health outcomes, and vice versa for clinicians on performance outcomes. The ability for embedded models of service delivery to promote relationship development between clinical and performance staff was suggested to be a key factor in facilitating this type of collaboration.

> "*My experience with high-performance coaches is for the most part they are very relational people, and are often reluctant to engage in support without a sense of the person they're working with, their motivations, their commitment to the program."*
>
> *Health manager*

The importance of context and aligning with broader organisational goals

The ability of embedded models to allow providers to achieve a greater sense of context was noted as being a key advantage, relative to fee-for-service arrangements. This includes a deeper understanding of what an individual provider's role is and where that sits within the broader high-performance strategy for the athlete or the sport. This was perceived to increase provider buy-in by providing a sense of purpose and shared goals.

> *"The more embedded model allows the opportunity to understand far better what's trying to be achieved with the athletes."*
>
> *Health provider*
>
> *"Often people want to work in sports because it's a bit sexy and a bit interesting, and Australians love sport. People working in sport really want to feel part of it and celebrate the wins."*
>
> *Health manager*

Duty of care considerations

The duty of care that providers feel for athletes in high performance sport settings was described as being of a different nature to what they may have in a private practice setting, due to the additional complexities in sporting environments. This includes the fact that providers are often responsible managing an athletes' health while they are travelling, as well as having responsibility for whole teams of individuals where issues affecting one individual may also impact on the broader team. By achieving cohesion and integration across all relevant aspects of health care, particularly for mental health issues, athlete outcomes are more likely to be optimised.

"If we don't have all the relevant information, we're taking really big risks and practitioners can make naive decisions."

Health provider

Provider autonomy and flexibility

The ability for providers working under embedded models to have greater autonomy and flexibility in the types of services they provide was a consistent theme. This includes the growing recognition around the importance of ancillary activities beyond direct consultation time with athletes.

"Being on-site within the training facility, when athletes come in for gym two or three times a week, even if it's just that quick 5 minute conversation within a gym that doesn't get noted within a consultation side of things, that can have those huge benefits."

Health manager

Creating incentives for proactive care

While it was generally recognised that embedded models had greater implicit incentives for activities such as proactive care and inter-disciplinary collaboration, some participants reported on their experiences in creating explicit incentives to further encourage these activities within both fee-for-service and embedded provider models. This included the provision of 'billable' fee-for-service time for non-contact activities such as attending meetings, gym sessions or performing administrative tasks, as well as a formal directive for embedded providers to allocate a certain proportion of their time to non-consultation activities.

"I'd rather there's less consulting time, but the consulting that's done is good quality because there's a communication with other practitioners, coaches and sports and conditioning staff."

Health manager

It was noted that good integration can be achieved with external contract-for-service providers, but this continuity needs to be prioritised and resourced. An example was provided of a long-term contract-for-service provider who regularly attended competitions, travelled in camps and participated in other activities beyond the traditional clinic-based model. This allowed the provider to gain a better understanding of the demands of the sport and what coaches needed, as well as allowing the athletes to view the provider as a core member of the team.

Barriers of reimbursement models

A number of potential barriers or drawbacks to the success of embedded provider models were discussed.

Capacity of providers to deliver proactive models of care

A perceived barrier to the successful implementation of embedded provider models was a lack of provider capacity. When providers were required to deliver services across a relatively large number of athletes on a limited FTE allocation, their ability to deliver high quality and proactive or preventive types of care was likely to be diminished.

> *"Just putting someone in that [embedded] position is not enough… providers need the capacity to do what they need to around that proactive side of things too."*
>
> *Health manager*
>
> *"It's more about being able to get access. Access to that expertise, being able to get management plan continued throughout each athlete's progression. They can't be done if we have only 0.1 FTE across more than 40 athletes."*
>
> *Sports manager*

Attracting high calibre providers

The challenges of attracting and retaining highly experienced providers was highlighted as a key barrier to the success of embedded models. This arises from the disparity in provider remuneration levels available within the government funded sport system, in comparison to professional sports or private practice which can be up to twice as much. It was suggested that it may not be economically viable for experienced providers to be engaged on a full-time basis within government funded sport settings, with most opting to supplement their income through private practice.

> *"Models have to factor in the experience and quality of the service providers that you get with those models."*
>
> *Lead health provider*
>
> *"There's only so much you can do… I have to keep enough private work so I can support working in high performance sport"*
>
> *Health provider*
>
> *"We've found that 0.4 [FTE] seems to be the sweet spot... you're embedded enough to have a meaningful impact and do some proactive service delivery, maybe up to 0.6. Anything beyond 0.6 you then lower the calibre of the provider, is what we're finding."*
>
> *Lead health provider*

Lack of specialist expertise

Issues around generalisation versus specialisation as they relate to provider reimbursement models were discussed. It was acknowledged that embedded models are not able to achieve the

level of specialist expertise available from external referrals to fee-for-service providers. Decisions therefore need to be made about which services to embed and which need to sit outside of that model and can be accessed on a needs basis.

> "*It's not one size fits all… we need to have the flexibility within the service to enable us to bring in the experts and specialists when required."*
>
> *Lead health provider*
>
> *"I think a little bit of mix [of embedded and fee-for-service] is good as there might be some specific needs of some athletes that sit outside what might traditionally be seen under a daily training environment."*
>
> *Health provider*

While the lack of specialisation was a commonly perceived limitation of embedded models, the trade-off that comes with this was also acknowledged, with interdisciplinary collaboration and coordination being prioritised over higher-end expertise on an acute basis.

Other types of reimbursement models

In addition to fee-for-service and embedded models, there was some discussion around the potential merits and drawbacks of other types of arrangements. While none of the participants had direct experience with pay-for-performance models, there was a general consensus that these types of arrangements were unlikely to be effective in the context of high-performance sport. Some participants noted the use of these arrangements within professional sport, where there was a perceived higher rate of 'low value care' provision. Additionally, it was suggested that pay-for-performance arrangements had the potential to be influenced by personal relationships and a provider's networking ability, rather than outcomes. The potential for cultural issues to arise was also mentioned.

> *"Culturally that would be difficult within the organisation. The organisation may struggle if different providers were engaged on entirely different arrangements."*
>
> *Sports manager*

Some providers discussed being engaged on a 'daily rate' or 'retainer' type arrangement, defined by the provision of a certain number of hours or level of access to the provider. There were mixed experiences under these arrangements. One provider indicated that the level of services they provided far exceeded the agreed number of days they were being reimbursed for, while another provider felt comfortable that they could provide an adequate service within the agreed terms.

> *"I'm engaged for one and a half days a week, but I've tracked my time and it's way more… it sits more around two and half days' worth of hours"*
>
> *Health provider*

"I'm willing to take the risk that of, they can sign up for unlimited access to me, and I take the risk that I'm good enough at my job that they don't ring me 10 times a day."

Lead health provider

2. The inner context

Facilitators within the inner context

Perceived ability to achieve economic efficiencies

Factors that were perceived to support the adoption or success of embedded service models included the assumption that these models represented better value for money from an organisational perspective. This was largely due to the increased focus on preventive measures.

"[There is a need to] get our primary and secondary prevention models to be more efficient, rather than always having to look at that tertiary level and be reactive."

Sports manager

"Primary prevention we want to be our first line of defence, with tertiary prevention or intervention to be our last time of defence. In a fee-for-service model, it is near impossible to focus on any primary prevention, and very limited capacity for secondary prevention or early detection and management… We're paying a lot of money to basically get tertiary prevention at best."

Health manager

Role of internal advocates

The key role of internal advocates for different reimbursement models was widely agreed to a key enabling factor. It was suggested that non-clinical management and executive roles, as well as athletes, would be particularly effective advocates. The important role of organisational leaders, as well as providers, in taking on an education role to increase the health literacy of coaches and athletes was also recognised as being an important driver of behaviour change in enabling a shift to more preventive care approaches.

"Non-clinical, executive team members within large organisations play a fairly significant role as patrons and defenders of a more integrated healthcare system."

Health manager

"Ultimately the athletes [should be advocates] as the users of the healthcare services… in a perfect world, you'd have the athletes with enough of a degree of their own health literacy to be able to ask questions and drive systems approaches... I don't think that currently exists."

Health manager

Well defined service agreements

The importance of clearly defined agreements and expectations when engaging providers on salary-based, embedded models was noted. When providers lack this clarity, they tend to 'float' and may be perceived as less effective.

> *"Being embedded requires real clarity in what that looks like… ambiguity is the enemy."*
>
> *Lead health provider*

Use of data-based approaches

The potential for data-based approaches using injury and illness surveillance to identify problems was highlighted. For example, population level NSO data could be used to identify key issues and develop and evaluate an intervention to target these. One participant described their experiences with using this approach to achieve a more efficient use of resources when the available funding was not sufficient to service the number of athletes they had responsibility for. They used internal injury surveillance data to identify programs with the highest injury rates, and subsequently put targeted primary prevention interventions in place. This in turn brought injury rates down and allowed for additional provider time to be freed up to focus on other areas of need.

> *"From a health and availability perspective things have significantly improved [since using this approach] over the past 18 months."*
>
> *Health manager*

Effective implementation

Factors that would be likely to contribute to the successful transition to different funding models were discussed. Participants highlighted the importance of: getting 'buy-in' from multiple stakeholders, both internal and external; allowing sufficient time for stakeholders to consider the proposed changes and contribute to their development; and adopting an iterative approach with changes introduced in phases. The adoption of a change management framework was recommended.

> *"It takes some time to get everyone as close to being on the same page as possible… it's something that can't be done overnight."*
>
> *Sports manager*

Barriers within the inner context

Ability to demonstrate the value of services

A common and consistent theme across the discussions was the difficulty in defining and quantifying 'value' of service provision in a way that wasn't directly linked to activity-based measures.

> *"One of the challenges in my area, is how do we show value? If we can get better at doing that, is that going to improve our resourcing and value and ability to be more embedded in sports and institutes?"*
>
> *Health provider*
>
> *"What is asked for from higher up management is how many consultations have occurred… it does not give an appropriate measure on the quality of service that's being provided."*
>
> *Health manager*

There was a consensus that achieving optimal performance, while maintaining a high standard of health, was a key overarching goal. However, using performance-based measures alone as an indicator of the effectiveness of service provision was problematic due to its "multifactorial" nature. The idea of 'athlete availability' as a measure of effectiveness was discussed, with many participants perceiving this measure to be inadequate.

> *"Availability on its own serves no purpose. Availability is a platform for performance."*
>
> *Health manager*

The difficulty in defining and measuring positive health as a concept was discussed. This leads to health often being framed in a negative sense, for example the absence of illness or injury. This in turn makes it difficult to understand and quantify how optimal health in a positive sense may relate to better performance outcomes.

> *"I'm not interested in how good you are at rehabbing a calf strain, I want to know what you did to prevent the calf strain happening in the first place."*
>
> *Lead health provider*
>
> *"It's really hard to measure the absence of an event. I can measure a physio appointment, I can measure a psych consult. But an athlete going: I'm psychologically really clear focussed and know what I'm going to do so I don't need [a psych consult] because we've done the work, how do you measure that? How do you actually track that in AMS? That's where we've ultimately got to get to if we're truly saying we're doing proactive service delivery."*
>
> *Lead health provider*

Some participants had experiences with using process-based measures to track and measure provider impact. This included the implementation of periodic health evaluations, medical reviews or provider-specific health management plans, that could then be appropriately

actioned and followed up. The importance of promoting an athlete-centric approach was also recognised.

> "*[Periodic health evaluation] doesn't just become a KPI for the clinician, it becomes a KPI for the athlete and the coach as well, as they're placed into the athlete's individual performance plan."*
>
> *Health provider*
>
> *"We should be working towards what the athlete's performance goals are, whether that's a team goal or an individual athlete goal."*
>
> *Lead health provider*

System-level barriers

A number of system-level barriers to embedded provider models were identified. A misalignment in approaches was described around the role of mental health services, which the national institute advocates to occur via external referral while some individual sports and state institutes instead advocate for fully embedded psychology service provision.

> *"There's definitely system limitations for the development of integrated mental health services… the proactive sports and state institutes are strong advocates for it, but its left to the organisation to advocate for that, there's not a national approach."*
>
> *Health provider*

Other system-level barriers were identified around the ways in which providers are expected to report on their services using electronic platforms such as AMS.

> *"You get paid for preventing having to pick up pieces, yet we have a system that wants to track us picking up pieces."*
>
> *Lead health provider*
>
> *"[Management are] saying that want this preventive health model, they'll say all the right words, but then they have a system in place for your remuneration that completely is in conflict with that."*
>
> *Lead health provider*

Top-down decision-making processes

A common theme to arise around the barriers to effective reimbursement models related to top-down decision making that did not consult with relevant experts or stakeholders. There was a perception that decision making was not always informed by evidence-based practice, such as the use of national or international clinical guidelines. It was also suggested that decision makers should be better leveraging the relevant expertise within the organisation.

"There's a lack of understanding about what is best practice for health service delivery… those making decisions have to be better informed."

Health provider

"*There aren't enough of the performance health people at the table when the conversations are being had, so you have management and administrative people making decisions on what servicing should look like."*

Lead health provider

Additional concerns were raised about the role of management in imposing restrictions on providers and organisations that limit their autonomy, in turn undermining the key benefits of embedded provider models. This included placing onerous requirement on providers to demonstrate arbitrary measures of activity, the imposition of strategies such as voucher systems, and overly rigid requirements about the level and mix of services that can be purchased within the allocated funding.

"Management gets involved to try and quantify service and then restrict it, they might introduce voucher systems and then it's almost like a fee-for-service model within an embedded model, and it just doesn't work."

Sports manager

"[there needs to be] some ability for the sports to be able to achieve greater outcomes by making sure we can individualise within the funding provided."

Health provider

Lack of appropriate health service coordination

Participants described the challenges that can arise in terms of coordinating and managing a group of health professionals. There is often no dedicated role for this, and it is often left to the coach to receive and filter all of the relevant information. Additionally, when providers want to recommend a treatment option that is classified as discretionary in nature, the budget often sits within the sports and therefore puts coaches or administrators in the position of deciding what medical treatment they will pay for. Participants did not believe that coaches were best placed to perform this role, as they typically lacked the necessary skillset and expertise, and their role has multiple competing, and potentially conflicting, demands. This is particularly an issue with less experienced coaches who may not be used to working in a high-performance sport environment.

"Some coaches, it's almost too much for them to deal with a sports scientist or a physiologist at times if they just don't understand it, and how they can best utilise those services."

Sports manager

"What's lacking in our embedded model is someone who is a health expert and able to work alongside the coach… I think that happens better in professional sports, I don't think that's happening well in our Olympic type sports."

Health provider

The historical role of a 'sports and medicine coordinator' was mentioned as a potential solution to these issues; these roles have been largely discontinued in recent years due to the lack of available funding. Other alternatives that were suggested included the use of a small reference group of two or three individuals with a broad combined knowledge base spanning both health and performance, that could make decisions or provide guidance.

3. The outer context

There was relatively little discussion around the impact of outer context factors as either barriers or enablers to provider reimbursement models. The increased availability of funding into the high-performance sport system, of the back of Australia's recently announced successful Olympic bid, was mentioned as a key enabler of changes to service provision models.

"[The Australian Olympic bid] provided some options to consider that may not have necessarily been possible at a previous resourcing level."

Health manager

An additional outer context factor mentioned was the International Olympic Committee (IOC) position statement on athlete mental health, in particular its acknowledgement of interdependencies that contribute to both athlete mental health and health outcomes. This was an example of international-level policy driving the approaches being adopted within Australian sporting organisations.

Overall study conclusions

While several forms of value-based reimbursement models have been implemented and evaluated across a range of clinical settings, there is limited evidence available to inform an "optimal" model. This is unsurprising due to the complex nature of health systems and the context-specific nature of strategies required to address challenges within particular clinical settings or patient cohorts. In learning from this body evidence, high-performance sport should be aware of the potential positive and negative outcomes of each model, and the widely acknowledged need to account for important contextual barriers and enablers in designing and implementing alternative reimbursement models.

Findings from the focus group discussions conducted as part of this study were valuable in highlighting some of the important barriers and enablers that needs to be considered in the Australian high performance sport setting. Reflecting the experiences of the participants, these discussions focussed largely on the differences between fee-for-service models and salary-based "embedded" provider models.

There was a general consensus among participants that embedded models had several key advantages, including the potential for more proactive models of care, enhanced inter-disciplinary collaboration, increased provider autonomy and the ability for providers to have a deeper understanding of the relevant context and how their role aligns with a broader set of priorities for an athlete and the organisation. However, some key caveats around these, as well as some potential drawbacks of embedded models were also noted. Specific barriers included the potential for providers working under these models to revert back to reactive care delivery when not afforded adequate capacity to provide services, and the challenges associated with attracting high calibre providers when salary rates were substantially less than available in professional sports or in private practice.

Wider contextual barriers and enablers were also highlighted within the focus groups. Common themes included the challenges around providers being able to demonstrate and quantify the value of their work in embedded models, and the potential for high-level decision making to occur without adequate consultation or engagement with relevant expertise. Key context specific facilitators included the availability of additional funding, the role of internal advocates, a focus on individual athlete performance goals and the use of data based approaches to drive better outcomes.

This report has highlighted the complex interplay of factors that may influence outcomes under different reimbursement models within high performance sport. It is recommended that the future design and implementation of these models is informed by an understanding of the evidence base as well as wide and meaningful consultation with providers and other key stakeholders within the organisation.

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Appendix 1: Summary of excluded review papers

Summary of systematic review papers excluded from the umbrella review due to ineligible country/region or setting

First author/year	Country/ region	Setting (acute/primary/ community)	Patient cohort	Reimbursement model(s)
Agarwal, 2020	US	Tertiary care	Non-specific	Bundled payment
Carlo, 2020	International	Mental health	Mental health	Multiple
Das, 2016	LMIC	Maternal/child health	Maternal/child health	Pay-for-Performance
De Vries, 2021	International	Maternal/child health	Maternal/child health	Multiple
Dietz 2019	International	Tertiary care		Bundled payment
Ghazaryan 2021	LMIC	Tertiary care	Non-specific	Multiple
Heider 2020	International	Secondary care	Non-specific	Multiple
Herbst 2017	International	Secondary care	Opthamology	Pay-for-Performance
James 2020	LMIC	Maternal/child health	Maternal/child health	Multiple
Jia 2021	International	Secondary care	Non-specific	Multiple
Kim 2020	International	Tertiary care	Surgical	Pay-for-Performance
Manickas-Hill, 2019	International	Tertiary care	Total joint-replacement	Bundled payment
Mathes 2019	International	Tertiary care	Admitted patients	Pay-for-Performance
Mendelson 2017	International	Secondary and Tertiary care	Non-specific	Pay-for-Performance
Milstein 2016	OECD countries	Tertiary care	Non-specific	Pay-for-Performance
Mitchell 2019	US	Secondary and Tertiary care	Oncology	Multiple
Nejati 2019	International	Secondary and Tertiary care	Oncology	Multiple
Patel 2018	LMIC	Maternal/child health	Maternal/child health	Pay-for-Performance
Quinn 2020	International	Secondary care	Non-specific	Multiple
Tan 2018	Developing countries	Non-specific	Non-specific	Multiple
Witter 2012	LMIC	Non-specific	Non-specific	Pay-for-Performance
Yu 2019	International	Maternal/child health	Maternal/child health	Pay-for-Performance

Yuan 2017	International	Secondary care	Outpatient	Multiple

Appendix 2: Semi-structured interview guide

Health care funding models in high performance sport - workshop guide

The following guide is intended to be used to conduct a semi-structured workshop for a project related to alternative health care funding models in high performance sport. This builds on the findings of a literature review on the same topic.

Objective:

To obtain key stakeholder insights into the acceptability, feasibility and sustainability of alternative health care funding models.

To identify factors that may support and barriers that may impede implementation of alternative funding models in the context of high-performance sport in Australia.

How to use this guide:

The questions are based on the constructs of the Exploration, Preparation, Implementation, Sustainment (EPIS) Framework[1] to ensure all aspects of implementation are considered in a comprehensive manner.

1. All key questions should be asked
2. Should other relevant issues be raised they will be explored in the relevant section, with prompting as required
3. Facilitators will ensure discussion progresses in a timely, yet informative manner.

Introduction

- Introductions to the research team
- Overview of research question and aims and what we hope to achieve in this workshop
- Mention that session will be recorded, clarify issues relating to privacy and confidentiality and mention the opportunity to withdraw at any time
- Mention how this research will be used
- **Opportunity for participants to ask any initial questions**
- **Opportunity for participants to provide verbal consent**

Key topic 1: The innovation

A 20- 30 minute presentation will be given by a research team member to summarise preliminary findings from the literature review

Potential questions/ prompts

Let's start by discussing the services your [agency/group/organisation] currently delivers.

[1] Aarons GA, Hurlburt M, Horwitz SM. Advancing a conceptual model of evidence-based practice implementation in public service sectors. Administration and Policy in Mental Health and Mental Health Services Research. 2011 Jan 1;38(1):4-23.

1. Tell us briefly about your experience delivering health services to high performance athletes and your [organisation's/group's] role in implementing these services.

2. Did you have to adapt your services to meet the contextual needs of this setting and characteristics of the patients? *(prompt: how might treating athletes be different than the general population??)*

3. Who is being provided for under the current service and who is missing out*? (prompt: who should be targeted if we were able to expand service provision more widely)*

4. How well do you believe current health services provision is working in terms of maximising athlete health and performance?

Key topic 2: Inner context facilitators and barriers

Let's talk specifically about the inner setting of your organisation/group now.

Potential questions/ prompts

What are the facilitators and barriers to implementation/service delivery in terms of:

1. **Leadership?**
   - Tell me about perceived support (or lack of) at all organisational levels for a potential change in health care funding or reimbursement models, away from fee for service?
   - Who would be critical to making implementation of new funding models a success? Consider individuals involved with oversight and/or decision-making who are proactive, knowledgeable, supportive and perseverant. *(prompt: who might block success?)*
2. **Characteristics of your organisation?**
   - How does your organisation use new knowledge and support knowledge and skill sharing?
   - What is the general level of receptivity in your organisation to implementing new change? Is there leadership, resourcing and support to do so? *(prompt: do organizational members feel committed to implementing an organizational change and confident in their collective abilities to do so?)*
   - How does organisational culture, climate and communication impact service delivery? *(prompt: consider support for risk taking, teamwork, speed of action and tolerance of mistakes*
     - Is adequate funding of health care service delivery a priority from the perspective of your organisation?
3. **Characteristics of people in your organisation?**
   - What shared or unique characteristics of individuals in your organisation influence the process of health service delivery (e.g. values, goals, attitudes, skills, social networks)? (prompt: what values regarding health and a good quality of life are highly regarded by members of your organisation)?
4. **Staffing processes?**

- What processes or procedures are in place in the organisation related to the hiring, review, and retention of staff which impacts on health service delivery? *(prompt: staff turnover)*

Key topic 3: Outer context facilitators and barriers

Let's talk now about the outer setting of your organisation/group, considering its place in the broader high performance sport system in Australia

Potential questions/ prompts

What are the facilitators and barriers to implementation/service delivery in terms of:

1. **The service environment?**
   - What are the state and federal sociopolitical contexts that influence the process of implementation and service delivery? *(prompts: policies; legislation; monitoring and review; auditing; mandates)*

2. **Funding?**
   - Do you believe there is adequate resourcing currently available for health service provision?
   - Are there current incentives (or disincentives) that impact on service delivery and/or service change e.g. pay for performance schemes, alternative reimbursement mechanisms, grants, contracting arrangements etc.?

2. **Leadership?**
   - Who do you think are the key players at a system-wide level who would need to be involved in developing and implementing new funding models for health care provision, to give this the greatest chance of being successful?

3. **Patient/Client Advocacy?**

   Is service delivery at a system-wide level influenced by support or marketing for change by consumers i.e. athletes?

4. **Inter-organizational Environment & Networks**
   - Are there inter-organisational networks in which you are involved through which knowledge is shared and/or goals related to health care are developed? *(prompt: direct or indirect networking)*
   - Might these support or obstruct new service model changes?

5. **Patient/Client Characteristics**
   - Are their particular demographics and individual characteristics of the target population (i.e. athletes) that influence success or failure of service delivery?

Key topic 4: The innovation- Future directions?

And finally, just a couple of questions…

1. What services or activities have worked best to support athlete health and wellbeing in the past?

2. What is the single largest barrier or facilitator your [organisation/group] faces to being able to implement an alternative health care funding model?
3. What do you think is important for decision makers to know/understand about how to support the delivery of health services in high-performance sport at a system-level?
4. What do you see as being the ideal model for funding health care in a way that maximises outcomes from allocated resources?