



Acceptability of financial incentives or quasi-mandatory schemes to increase uptake of immunisations in preschool children in the United Kingdom: Qualitative study with parents and service delivery staff



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ABSTRACT

Introduction: Since the 1990s strenuous attempts have been made to rebuild trust in childhood immunisations. This study aimed to understand if financial incentives (FI) or quasi-mandatory schemes (QMS), e.g. mandating immunisations for entry to universal services such as day care or school, might be acceptable interventions to increase immunisations uptake for preschool children.

Material and methods: Parents and carers of preschool children ($n=91$); health and other professionals ($n=18$); and those responsible for developing and commissioning immunisation services ($n=6$) took part in the study. Qualitative methods were employed to explore the acceptability of FI/QMS with stakeholders. Framework analysis was used to develop a coding framework that was applied to the whole dataset. Interpretations of the emergent themes were verified between researchers and presented to the project's Parent Reference Group to ensure coherence and relevance.

Results: (1) FI: parents and professionals felt introducing FI was inappropriate. It was acknowledged FI may encourage families living in disadvantage to prioritise immunisation, but unintended consequences could outweigh any advantage. FI essentially changes behaviour into a cash transaction which many equated to bribery that could inadvertently create inequalities.

(2) QMS: parents and professionals highlighted the positives of introducing QMS, stating it felt natural, fair and less likely to create inequality. Despite QMS' potential to positively impact on uptake there were concerns about the implementation and workability of such schemes.

Discussion and conclusion: FI for preschool immunisation may not be acceptable, within a UK context. Introducing FI could have detrimental effects on uptake if it were associated with bribery and coercion. Quasi-mandatory schemes, mandating immunisation for universal service entry, was the most acceptable option and could contribute to the normalising of immunisation. Future work would be needed to assess how this could be successfully implemented and if it did indeed increase uptake.

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1. Introduction

Childhood immunisation programmes are a highly effective public health strategy to reduce the incidence of (and the associated morbidity and mortality from) infectious diseases. The World Health Organization has set a target of 90% coverage for all

immunisations, and 95% coverage for diphtheria and measles, to achieve herd immunity [1,2]. In the United Kingdom (UK), strenuous attempts have been made to rebuild trust in immunisation since the MMR debacle of the 1990s when Andrew Wakefield made false claims about a link between the MMR vaccine and autism [3,4]. In 2011–2012, MMR uptake stood at 86% in England (Wales 82.4%) [5] and, in that period, a number of epidemic 'flares' of measles occurred, 10% of cases involving hospitalisation [6]. Immunisation coverage rates in England and Wales demonstrate that coverage for both diphtheria and measles are consistently lower than the recommended 95% with geographical pockets of low uptake [7], leaving the potential for herd immunity to be compromised and the possibility of further epidemic 'flares'. In the UK, participation

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in the childhood immunisation programme is voluntary and provided free of charge [8]; however, other countries operate different systems such as providing a financial incentive or penalty [9] or mandating immunisation for school entry [10].

Between 2013 and 2015 a 3-phase study was undertaken which aimed to examine what level of inducement or penalty might be an effective and acceptable way of increasing uptake of all recommended preschool immunisations in the UK. We were interested in the introduction of financial incentive (providing a cash reward for immunising a child) or quasi-mandatory schemes (requiring immunisation for entry into universal services such as day-care or school). The 3 phases of work included: a systematic review of existing research evidence on the effectiveness, acceptability, cost, and efficiency of financial incentives or quasi-mandatory schemes for increasing uptake of vaccinations in preschool children [11]; a qualitative study undertaken with a range of stakeholders, exploring what is and is not acceptable about these schemes and what can be done to improve acceptability; a discrete choice experiment exploring the relative preferences of parents and carers of preschool children for approaches to delivering vaccination programmes, including financial incentives and quasi-mandatory schemes, and the predicted uptake rates of these.

This paper reports on the second of these phases. A qualitative approach was employed to build upon the results of the systematic review [11]. It aimed both to gather and synthesise data about the views, wants and needs of parents and health and other professionals in relation to preschool vaccinations, and also to examine reaction to the hypothetical introduction of financial incentive or quasi-mandatory schemes.

2. Materials and methods

We sought to include the views of two distinct stakeholder groups, namely parents and carers of preschool children and also those who would either have a role in creating or commissioning such policies or who would have to implement them e.g. those working in policy, health professionals, teachers, etc.

2.1. Sampling

2.1.1. Parents

Factors associated with uptake were used to guide purposive sampling [12,13]. Evidence suggests that those living in areas of deprivation are less likely to prioritise immunisation and conversely those living in areas of affluence are more likely to be conscientious objectors of immunisation [14–17]. Therefore we targeted Children's Centres serving highly deprived geographical locations and breast feeding support/toddler groups serving affluent geographical locations in a bid to include non or partially immunising parents. On advice from our expert steering group (comprising the wider project team, policy and practice partners, and academics) we included views of parents resident in geographical areas of North East England that had and had not experienced a measles outbreak in 2012/2013. We hoped to recruit both immunisers and partial or non-immunisers and parents from a range of socioeconomic groups, however, only one parent identified themselves as a partial immuniser.

Eight locations for focus groups were identified to carry out the fieldwork. This included Children's Centres serving populations living in areas of deprivation ($n = 4$ groups in a 'measles outbreak' area, $n = 4$ groups in a 'no measles outbreak' area) and two were carried out in breastfeeding support/baby and toddler groups which served a more affluent population ($n = 1$ 'measles outbreak' area, $n = 1$ 'no measles outbreak' area). See Table 1.

Table 1

Characteristics of areas from which focus group participants were drawn.

Focus group number(s)	Descriptor
1	South of region. Lower deprivation. Lower rates of childhood vaccination. High incidence of measles 2012–2013
4, 5, 7, 8	South of region. Higher deprivation. Lower rates of childhood vaccination. High incidence of measles 2012–2013
10	North of region. Lower deprivation. Higher rates of childhood vaccination. Low incidence of measles 2012–2013
2, 3, 6, 9	North of region. Higher deprivation. Higher rates of childhood vaccination. Low incidence of measles 2012–2013

Table 2

Number of interviews carried out with health and other professionals.

Professional group	Number of interviews completed
National & regional policy & commissioners	6
GP, practice nurses & practice managers	9
Health visitors	4
School nurses	1
Community paediatricians	2
Primary school head teachers	2

2.1.2. Health and other professionals

Participants were identified purposively, and through discussion with key stakeholders, taking into account job role and current responsibility for developing, commissioning and delivering vaccination services. This included both strategic level staff (commissioners; $n = 6$) and operational level staff (practice nurses, health visitors, general practitioners; $n = 13$), but we also extended the sample to other professional groups (community paediatricians, school nurses and primary school head teachers; $n = 5$) who might become involved in delivery if quasi-mandatory schemes were to be introduced.

2.2. Recruitment

Parents ($n = 91$ in total in 10 focus groups) were recruited through Children's Centres and local breastfeeding support/baby and toddler groups. Table 1 shows demographic makeup of each group. Parents were reimbursed for travel costs. Childcare was organised or reimbursed and a £20 shopping voucher was provided to thank participants for their time.

Health and other professionals ($n = 24$ in total) were recruited through the professional networks of the wider research team, the steering group and the North of England Commissioning Support Unit. A snowball sampling strategy was also employed, whereby participants identified other professionals to be contacted. Table 2 shows the number of participants recruited from each stakeholder group. Participants received written information about the project and signed a consent form prior to participation.

2.3. Data collection

Work with all participants centred on 6 scenarios derived from real-world examples identified in the systematic review:

- A universal gift of money upon completion of a full course of vaccinations for all parents (financial incentive).
- A targeted gift of money for non/partial immunising parents to bring their child's vaccinations up to date (financial incentive).
- A cash penalty for those unable to demonstrate a full record of child vaccination (financial incentive).
- Removal of childcare contributions from those unable to demonstrate a full record of child vaccination (financial incentive).

- Entry into preschool, nursery or day-care settings restricted to those able to demonstrate a full record of child vaccination, or acceptable reason for exemption (e.g. on religious, moral or medical grounds; quasi-mandatory scheme).
- Entry into school restricted to those able to demonstrate a full record of child vaccination, or acceptable reason for exemption (e.g. on religious, moral or medical grounds; quasi-mandatory scheme).

Vignettes were used in the parent focus groups as a method of generating discussion. Focus groups and interviews were digitally recorded with participant consent and transcribed verbatim. Focus group 10 was attended by more parents than expected ($n=23$), accompanied by 26 babies and toddlers. This group was broken into smaller discussion groups but the tapes were too noisy to transcribe, so, as a result, although this focus group contributed to our understanding, no direct quotes were extracted.

RM, a full time research associate, carried out the fieldwork with parents and carers. One other researcher was present during focus group discussions to take notes. Both researchers were female and had no prior relationships with any of the participants.

2.4. Ethical approval and conduct

The research protocol was approved by Teesside University's School of Health and Social Care Research Ethics and Governance Committee. The study was adopted to the NIHR portfolio to facilitate R&D approval.

2.5. Sample size

We conducted 10 focus groups with parents ($n=91$) which allowed us to reach thematic 'saturation' [18]. In addition we carried out 18 interviews with health and other professionals, and 6 interviews with policy makers and commissioners. The small number of interviews with the latter group did not allow us to achieve 'saturation'. These interviews were, however, designed mainly to give implementation context to the main focus on the work with parents and carers.

2.6. Analysis

Framework analysis was used to analyse focus group and interview data [12,19]. RM and JS initially read a subset of transcripts to identify recurrent concepts. These were organised into higher-order categories to provide the thematic framework. The framework was applied to the full data set by RM. The framework was iteratively refined until a definitive framework was achieved. Frequent discussions took place between RM and JS (as well as the wider research team) throughout the data analysis phase, to ensure that interpretations were credible, valid and shared [13].

A Parent Advisory Group was established to give their views on the project's methods and findings. This group comprised of parents and carers in one children's centre site. The results of the Framework analysis were presented and discussed with these parents to check that themes had not been overstated and were representative of their experiences.

3. Results

Data described in the following sections were obtained from parents, and health and other professionals. First we present findings that relate to the introduction of FI, either universally offered or targeted, based on immunisation status of the child. Secondly, we explore opinion about introducing quasi-mandatory schemes.

Box 1: Acceptability of financial incentives schemes.

Parent: Some people literally can't be bothered, which is horrible but . . .

Parent: So actually giving them money would get the child there. It's about the child at the end of the day, not the means. (Mothers, focus group 3)

Interviewer: You think it might make it a little bit more attractive to 'certain' people?

Parent: To 'certain' people.

Parent: If you're getting £50, yes of course it will. It will make some people get off their backside and take them [children] to the doctors. (Mothers, focus group 4)

It will bring a divide between the rich and the poor, because I can afford not to [immunise my child]. (Mother, focus group 1)

There's people who just can't be bothered to take their kids to get it done. And then they're the kids that end up catching it [childhood diseases] and it starts building up as a more common disease again. So to get them to go, I suppose [financial incentives are a good idea]. But then why should they be rewarded with money because they couldn't be bothered to take their kids in the first place? (Mother, focus group 6)

People would wait longer on purpose to get the vaccinations. And the ones who've done it on time would feel as if they were penalised. (Father, focus group 5)

I mean at the end of the day, having children and making sure that they're vaccinated against all these diseases should not be down to cash . . . I think they've [parents] got a responsibility; they bring these little ones into the world and they should look after them as best they can. (Practice Nurse 3)

Parent: I think it's wrong.

Interviewer: It's wrong, why is it wrong?

Parent: Well why would you bribe someone to get your kid's needles [immunisations] done?

Parent: They should want to.

Parent: It's your duty to protect your children. (Mothers, focus group 7)

You might get people who come [to have their children immunised] by paying them, but then not the ones that are just against them [vaccinations], because some people genuinely believe that they're no good for them, for their children, don't they? (Mother, focus group 4)

The monetary incentive would work for the lower socio economic class and there are quite a few in that particular class who either just couldn't be bothered, because they've too many things and their lives are very, not easy, discordant and lots of other things going on. So for them I think if there was a monetary incentive it might work in kind of attracting that class of people. But, as I said, the other class [who have made a conscious decision] is very unique and I don't think monetary incentive would work in them. (Community Paediatrician 2)

3.1. Acceptability of financial incentives (Box 1)

Introducing financial incentive to encourage uptake of vaccinations was met with overwhelmingly negative reactions from parents. There was some consideration that financial incentive might help to incentivise parents who had not previously prioritised immunisation and there was speculation that financial incentive would mainly be attractive to families living in disadvantage. It was noted that more affluent families would not be likely to be influenced by a financial incentive in the same way as less affluent ones.

Concerns were raised by parents from affluent areas that introducing financial incentive, regardless of how implemented, could create a divide between rich and poor. Parents who were financially stable could still make a conscientious choice about whether to immunise their child or not, as they could afford to disregard a financial incentive. This concern became more evident when parents were presented with scenarios that included a financial penalty, such as the removal of certain benefits or government contributions to childcare.

Parents were clear that if a financial incentive was to be introduced it would have to be universally offered, thus being perceived as an equitable offer, regardless of immunisation status or socioeconomic status of the child. The introduction of financial incentive might be seen as a way of appearing to reward parents for socially unacceptable behaviour (i.e. delaying vaccination), especially if this 'reward' was offered on a targeted basis (i.e. only to

Box 2: Workability and governance of financial incentives schemes.

Parent: Well no, they're [parents] being paid. The vaccinations cost a fortune in themselves. Every child that's immunised is getting that ... in other countries, people would have to be finding the money to get their children immunised, wouldn't they, against illnesses?

Parent: But then that comes back to where are they [the government] going to find the money from to pay for this scheme? (Mothers, focus group 3)

Put the money to better use. Build parks for the kids to go and play. Don't pay a parent to vaccinate. (Mother, focus group 8)

It's a big issue if you're going to give cash, especially in today's NHS culture of working smarter and leaner. so we've got to look at that. (Commissioner 1)

I have some experience of looking at financial incentives as a provider. ... Incentivising, for example, smoking [cessation] in pregnancy ... you hit a lot of financial governance issues around how you track that finance. When you pay it out, was it used by that person, what was it used for? So, you know, you might pay them a fiver [£5] for a vaccination, but are they then spending that fiver on fags [cigarettes], which is then your public health [issue] ... We didn't do it in the end. (Commissioner 3)

those whose children were not up-to-date with their vaccinations). Targeting of financial incentive to parents of children who were not up-to-date could lead to parents who had fulfilled their 'obligations' to immunise their child on time feeling penalised. Parents felt that a targeted form of financial incentive would lead to unintended consequences, in that people would begin to 'play the system' and delay immunisation to become eligible for the financial incentive, having detrimental effects on coverage rates. Professionals mirrored this feeling that financial incentive was distasteful. They held fast to the belief that immunisation was part of the obligation to be a responsible parent and that the introduction of financial incentive could erode the notion of parental responsibility to protect the child.

Regardless of the implementation strategy for financial incentive, parents commonly identified financial incentives as a form of bribery. Parents were resolute that financial reward should not be a factor when making a decision to immunise their child. All parties interviewed felt that financial incentives would be ineffective at incentivising parents who had made an informed and conscientious choice not to immunise their child, these parents being noted as particularly unwavering in their beliefs.

3.2. Workability and governance of financial incentives schemes (Box 2)

There were concerns that, in a time of austerity, when many public budgets are being cut, public services are under threat, and budgets being closely and publically scrutinised, the introduction of financial incentives would be an inappropriate use of resources. It was noted that immunisations are already offered free of charge to all children, at a cost to the UK NHS, and this offer in itself should be sufficient to incentivise parents to immunise their children. Parents stated that they would prefer to see public funds used in ways that could improve the quality of life for children in sustainable ways. Indeed, whilst parents believed that any financial incentive scheme should be offered universally, they raised concerns that money would then be needlessly spent incentivising parents who would have immunised their children without the need for an incentive. Experience of using financial incentive to encourage other health-related behaviours led to concerns amongst implementation staff about how financial incentive would be spent by parents. To avoid financial incentive being used to engage in negative health behaviours (tobacco use, alcohol consumption or poor dietary choices), it was felt better to provide vouchers which could only be spent in approved establishments. However, experience showed that, even then, these could be sold or exchanged for inappropriate products.

Box 3: Acceptability of quasi-mandatory schemes.

I prefer this idea [quasi-mandatory schemes] to the last one [financial incentive], I think it's more inclusive. And OK, yes fair enough it's implying that if you don't have the vaccinations your child can't go to the school, but I think it's probably fair from the school's point of view that they should be able to exclude people who are at risk of transmitting these diseases through the school. So, in that respect, I think it is fairer than the other one. (Mother, focus group 1)

Parent: I don't think the kids should be allowed to come [to childcare setting]. Like I know you can't, but like visit playgroups or Sure Start Centres or even be allowed at school nursery if they haven't been immunised. Because then they could be carrying something and passing it on to other kids.

Parent: Exactly, I agree with that.

Parent: Do you know what I mean, I don't think they should be allowed around any other kids if they haven't been immunised. (Mothers, focus group 7)

You're thinking in a sense that that's protecting your child, by everybody having their vaccinations, because obviously the infections or diseases will go round quicker. (Mother, focus group 3)

I think there is a lot to be said for mandatory requirement, you know, for entry into a day care or, you know, a preschool setting, be it, you know, for the under two's, yes nursery or, yes childcare nursery or educational nursery. And I think from a population health point of view and protection, and the great and the good, I think mandatory is something that we should be looking at. (Commissioner 3)

It should be made, [that] if you need childcare for your child, you're going in there with all these children who have already been immunised, if you want your child in that placement, you need to have your child immunised before it starts and that's the rule. And if they don't have it done, you can't have the childcare. (Mother, focus group 8)

I'd be quite happy if they did [mandate]. And I'd be quite happy to know that they've asked the other parents in there, because you're right, they do pick up everything at nursery, [Child's name] gets absolutely everything ... so it wouldn't bother me to be asked that and I'd probably get more comfort in knowing that everybody else is being asked that question. (Mother, focus group 4)

Parent: They [unimmunised children] are in contact with all the little babies that can't be immunised.

Parent: All the ones that can't be immunised because they've not reached the right age yet, or just the fact that there are a lot of three year olds and like two year old, and a baby is a lot more susceptible to complications than older kids. (Mothers, focus group 6)

I mean some of these adults can catch them can't they? It's not just children. When you were just saying there about a day worker, you know, comes into your home or whatever, they're going to go to other people's houses and everything. And it's the same as the nursery teachers, they're going to go home to their own families. (Mother, focus group 5)

Parent: If the nursery turned round and said, you can't come in unless you get immunised, that inspires you to go to the doctor's [surgery], doesn't it?

Parent: Then it seems like a rule – not just being forced to do it. (Mothers, focus group 2)

3.3. Acceptability of quasi-mandatory schemes (Box 3)

Unlike their reactions to the introduction of financial incentive, parents could see many advantages to the introduction of quasi-mandatory schemes, with those being preferable to financial incentive. Parents saw quasi-mandatory schemes as fairer and more equitable. There was general agreement that unimmunised children should be excluded from interacting with other children in settings such as day-care or school since they pose an infection risk to other children in the shared environment. By their very nature, day-care settings provide an ideal environment for the transmission of infectious diseases (communal toys/crawling children) and for this reason it was preferable to mandate immunisation for entry. It was felt that introducing a quasi-mandatory scheme would facilitate the normalising of immunisation behaviour, meaning that, if immunisation was just a routine requirement for entry, parents would accept it as 'just the way it is'.

It was felt that mandating immunisation for entry into childcare or education services would provide peace of mind for all parents that the likelihood of their child contracting an infection was reduced, through the protection afforded by herd immunity, especially for those children who were not old enough to receive

Box 4: Autonomy and democratic rights.

Parent: Surely you'd want your child to have the best education. You don't want them to miss out on that year, just because you haven't had your vaccination.

Parent: It's not just an education, it's a social life. You'd want them to socialise, wouldn't you really. (Mothers, focus group 7)

Lots of children could be affected by that, couldn't they? It's the parent making the decision that a child can't make. [Child's name] can't make a decision as to whether she gets her vaccinations or not; that's something that I have to make. She doesn't have that choice. So if I just don't give her them, then I'm affecting her future aren't I? Whether she goes to school to get educated or I educate her at home, and it won't be nowhere near the standard as a school would. You don't have time to educate the child at home. (Mother, focus group 4)

You can't really reprimand some parents for not taking their children in and say, well you'll be facing imprisonment if they don't go to school, and then say, but if they're not immunised they're not allowed to go to school. So then, do they face imprisonment for their child not going to school because they're not immunised? (Mother, focus group 6)

That's not actually how our country works. And as much as I've got my child immunised, and I believe in vaccination, I don't think you can start telling people they don't have the choice. (Mother, focus group 3)

The ethical aspect, the morality of it . . . It's like, you know, making a nanny kind of a state. We are a democratic county and, you know, everybody's beliefs and opinions are kind of respected. But then we are sort of saying; your child is not going to have an education if you don't immunise. (General Practitioner 3)

In a way I think that's nonsense because, for a lot of our families we would want mandatory nursery places for [them], our harder to reach families, where there is social need. So if we're saying they potentially might be the ones that are highest non-uptake of vaccinations, that becomes a nonsense. Because the thought beyond that then is, you're excluding the excluded . . . And quite often we want them in nursery because that allows parents maybe to access some parenting courses . . . then if we're to exclude those from nursery because they're not up to date with their vaccinations, that's a nonsense to me unfortunately. (Health Visitor 2)

I still think there'd be people who would say, well I'll home school or I'll send my children to this special homeopathic school down the road because I can afford to pay. I can get out of this, it doesn't apply to me. (Mother, focus group 1)

Box 5: Workability of quasi-mandatory schemes.

Who polices that then [identification of unimmunised child]? Say, for instance, we accept children into our nursery or into school, we notice they haven't been immunised . . . it's then office time or our parent support advisor who will be doing that chasing up I'd think. And I don't think that's a school responsibility. Again, that's a parent responsibility, or health professional's responsibility.

(Head Teacher 2)

If a parent wants a child [to get] into nursery, [and] their policy is your child must be up to date with vaccinations and you must have evidence of that [vaccination record]. What the evidence is, is another matter. You know, who can scrutinise a Red Book [child health record, held by parent]? Who can read a list of vaccinations? Does it need to be a health professional reading it? Can you train somebody in the nursery group to do that? So, there's those issues to consider as well. (Commissioner 1)

To share the child's information, we wouldn't just be able to, you know, County Hall wouldn't just be able to say, we need vaccination histories on these thirty children. We would, you know [have to get consent], and that consent thing would be the time consuming thing and . . . the practice shouldn't be responsible for getting the consent. (Practice Manager)

immunisation themselves. This idea of protecting the wider community of unimmunised or partially immunised people extended to staff working within the setting and families of all those who attend it. The introduction of quasi-mandatory schemes was identified as a way of encouraging those parents who had, for whatever reason, not prioritised immunisation to do so.

3.4. Autonomy and democratic rights (Box 4)

It did not pass unnoticed in this discussion that a child's rights to socialise and be educated should also be respected. In the view of many of the participants, the threat that a child would be denied these activities, based on incomplete immunisation status, should be a motivating factor to engage with the childhood immunisation programme. This was especially relevant when it came to school entry. However, conversely, parents felt that refusing entry to day-care or school would ultimately punish the child, rather than the parent, and jeopardise the child's future because of a faulty choice made by their parent. Parents also expressed concerns about the possibility of being prosecuted if their child was unable to attend school as a consequence of an immunisation decision as under current legislation parents can be prosecuted for taking their child out of school during term time in the UK.

There was concern that introducing quasi-mandatory schemes could be interpreted as a removal of parental choice, which parents felt was one of their rights as a parent living in a democratic society. Professionals wrestled with the potential ethical implications of introducing quasi-mandatory schemes and it was felt that such a scheme could undermine the work they did with families to engage them with services, ensure informed choice, promote better outcomes and that it might, essentially, be contrary to their professional ethos. Even the implementation of a quasi-mandatory

schemes would not ensure 100% coverage rates in preschool children as some parents, with the resources to do so, could opt their children out of state education and home-school them or pay for private education or day-care. Similarly, there would be some parents who opted out due to medical reasons. Again, it was noted that this would produce inequalities in the ability to make an informed decision.

3.5. Workability of quasi-mandatory schemes (Box 5)

Whilst it was believed that quasi-mandatory schemes might positively affect rates of immunisation, there were clearly concerns raised about both the ethics and the practicalities of such schemes in a UK setting. Head teachers were resolute that, if introduced, responsibility for administering quasi-mandatory schemes should not fall on them and they felt that the responsibility for this lay directly with the health sector. The process of identifying unimmunised children would be burdensome for schools' administrative systems and would require specialist knowledge and training to interpret the immunisation status of the child.

In the UK, parents have a personal health record containing their child's immunisation history, and there were concerns if this alone were to be used as proof of immunisation. Such record books are often lost or not up-to-date. It was highlighted by those in general practice that the sharing of personal data about a child's immunisation history between the health sector and other organisations, such as schools, could be problematic if schools became responsible for effectively 'policing' any quasi-mandatory schemes.

4. Discussion

Almost all participants in this study felt that the offer of financial incentive was inappropriate in the context of immunisation. A universal incentive was seen as a waste of resources, rewarding people for behaviours that the vast majority undertake without an inducement. There was some feeling that those families living in deprivation would be more open to the offer of financial incentive and that targeted incentives might encourage the prioritisation of immunisation amongst people who were insufficiently motivated otherwise. However, it was felt that any such targeted benefit could be outweighed by the unintended consequences of introducing financial incentive. In this respect the first concern is that it might be construed that the incentives were a form of bribery designed to overcome resistance to immunisation, stoking the fires of those who feel anxious about the safety of vaccines. The second unintended consequence could be the monetisation of a behaviour

usually seen as an act of good parenting and social responsibility. It was feared that breaking down these bonds of social responsibility would lead to parents playing the system. Concerns were surfaced that introducing financial incentive would create further inequality between parents from differing socioeconomic backgrounds. Whilst financial incentive may be attractive to families living in disadvantage, those parents who had the resources and power to not 'need' a financial incentive would remain able to make decisions about vaccination based on their personal beliefs. Financial disincentives or penalties were seen as 'fairer', and without the risks of associating immunisation with bribery (though one could argue that this degree of compulsion would have the same effect of inducing mistrust) and of monetising social behaviours.

Far more acceptable to participants was the notion of quasi-mandatory measures, principally barring entrance to preschool or school facilities unless a parent can demonstrate a complete immunisation record. There may be differences in acceptability of mandating entry to day-care rather than school, however in our systematic review of the literature [11] and the Briss, Rodewald [20] review there was an absence of evidence to suggest if or why this may be the case. Parents in particular, with their experience of their children's minor illnesses, noted that such settings were hotbeds for the transmission of infections, so that there was something natural about immunisation status being checked and an association with the need to maintain herd immunity at that point. That said, there was a feeling amongst parents that children had an entitlement to their education placements, and that they should not be made to suffer by parents who made a choice not to immunise on their behalf, either from personal beliefs or from fecklessness or fear. Some professionals were even more adamant that it was precisely the children of the most disadvantaged who benefited most from educational and play opportunities and that they were the last group in which one would wish to place an extra barrier to educational participation. At the end of the day it was felt that, in a democratic society, parents do have the right to choose whether or not to vaccinate their child and that there would always have to be a clause allowing conscientious objectors to withhold their child from the immunisation programme, so long as it was made absolutely clear to them what the risks were.

The workability of any such system of quasi-mandates was also questioned by professionals. Education staff were very reluctant to become responsible for 'policing' the health status of children at school or playgroup entry. Health professionals raised practical concerns about the recording and constant updating of immunisation status, as well as the sharing of confidential information with non-medical staff. Both parents and health professionals believed that there was a need to strengthen existing patterns of delivery of immunisation before such drastic measures as either financial incentive or quasi-mandatory schemes were brought in. Suggestions arising from parents focused around wider opportunities for immunisation through using more family-centred venues such as Children's Centres or community pharmacies. Professionals too noted many missed opportunities for both health promotion activity and opportunistic vaccination which promoted in national guidance [17]. Multicomponent interventions to improve uptake of immunisations that include health promotion and education have also been found to be effective [20,21]. The lack of a single vaccination recording system, accessible across multiple sites, was highlighted as a barrier to this. Many professionals who came into contact with families felt they would be happy to promote vaccination to families and in many cases would be happy to deliver the vaccination, should they be confident that the child had not already received it. Of course, there are issues around the availability and safe storage of the vaccines, complexity of the vaccination schedule

and being trained and competent to deliver the injection. However, there was a distinct feeling that opportunities for vaccinations were regularly missed.

Head teachers were reluctant to police quasi-mandatory schemes, but did, however, acknowledge that schools offered opportunities to promote child health, and even deliver vaccinations. For example, parents often attend an open day in the summer before the child enters full time education. School nursing teams could attend these events to discuss the importance of being fully immunised before school entry and even offer vaccination.

Financial incentives have been found to be effective in some circumstances to encourage health related behaviours [22–26] and the suggestion has been made that they may be more effective in encouraging one-off, short-term behaviours like vaccination, than improving sustained behaviour change over a long period, such as that required for weight loss and weight maintenance [27–31]. However, in the UK in particular, childhood vaccination has (because of well-rehearsed historical incidents) [32] become a heavily contested area that must be carefully negotiated.

Studies have shown the benefit of introducing a financial penalty for non-vaccination of preschool children [33,34] and this scenario was deemed the most acceptable of the financial incentives discussed in this study also. Health professionals did suggest that incentives that were not cash, for example shopping vouchers, might be more acceptable, whilst still having the potential to increase vaccination. Contradictory results have been reported in relation to financial incentives for other healthy behaviours. A review of the acceptability of financial incentives for healthy behaviours such as smoking cessation, weight loss, vaccination and screening (adults), physical activity, reduced alcohol consumption and safe sun exposure suggested financial incentives to be acceptable [35]. However, Promberger et al. [36] found acceptability for financial incentives for health related behaviours to be low. Governance and ethical issues were raised about the potential for vouchers to be used to facilitate unhealthy behaviours, such as buying alcohol or cigarettes, which would sit in contrast to the work being undertaken to promote healthy behaviours generally, these concerns mirror evidence about introducing financial incentives in other settings [37]. Findings from both stakeholder groups provide strong support for previous research that describes health promoting incentives as coercive and divisive [38,39], even though by their very nature quasi-mandatory schemes are coercive they were not discussed in this way by the stakeholders in this study.

Our results support findings from US studies and the current systematic review around the acceptability of quasi-mandatory schemes for increasing uptake of vaccination [11], suggesting that the introduction of such schemes, with the inclusion of an opt out system, would be acceptable to parents and professionals and could encourage the normalisation of vaccination, whilst being equitable for parents across the socioeconomic spectrum. Possible barriers to implementation have been highlighted earlier in terms of record sharing and school's reluctance to administrate or 'police' childhood immunisations, in the US mandated schemes are in place but are rarely enforced [40,41]. However this approach, making immunisation compulsory for entry into education, may not necessarily require dedicated and sustained input from schools. Schools are used as a site to deliver several immunisations in the UK [42,43] so the idea of using the school as a site for immunisation is not new though this approach is not without its objections [44]. In England, the height and weight of all reception children (aged 4–5 years) is collected by school nurses for the National Childhood Measurement Programme [45], and sight and hearing tests are conducted in those same age groups [46] it is not outwith the realms of possibility that immunisation status be collected and supported by a catch-up

programme for those children who have just entered mainstream education.

4.1. Strengths and limitations

This qualitative study strengthens evidence about the likely reaction to the introduction of both financial incentives and quasi-mandatory schemes designed to increase the uptake of vaccinations for preschool children within a UK context. Representation from key stakeholder groups was included which allowed for triangulation of findings [47] across stakeholder groups.

However, low representation from partial and non-immunising parents within the parent sample does pose a limitation to the extent our findings can be inferred to that population of parents [12]. These views are largely absent from the analysis and future work should prioritise their inclusion. The number of interviews with health and other professionals was small and intended to provide implementation context to the work with parents and carers, which was the main focus, rather than be representative of that population [12]. However, if financial incentives or quasi-mandatory schemes were to be implemented further work with these groups would be essential to establish the workability of such schemes.

Authors' contribution

RM contributed to the design of the study, recruited participants, carried out fieldwork, analysed the data and wrote the initial draft of the paper. JS secured funding for the project, contributed to the design of the study, analysed data, and commented on and revised drafts of the paper. JA secured funding for the project, contributed to the design of the study and commented on previous drafts.

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Conflict of interest statement

None declared.

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