North Highland Vaccination Service Model – as part of the Vaccination Transformation Programme

Background

As part of the GP Modernisation Programme, Vaccination Transition is required to occur by the 1st of April 2023. Over the preceding years, due to the pandemic, NHS Highland began and has complete the transition of covid -19 and influenzas' vaccinations, but general adult and pre-school vaccinations are still required to transition.

This plan sets out a transitional model for service delivery allowing for further operational development and professional review as we gain a greater understanding of the best value possibilities associated with localised integration of vaccination services, which will allow us to build toward a best value model of delivery in the years to come.

Summary

- Transitional model (model 3) is recommended for approval
- Model 3 utilises:
    - centralised scheduling procedures
    - Integrated team based general adult nurses providing vaccination administration
    - Centralised pan Highland team for pre-school vaccination administration
    - Centralised portfolio operational planning
    - Best value principles to maximise service performance, enabling potential for 3rd party administration of vaccinations
- Model has been proposed by Professional leadership, planned by Operational Management and reviewed by the vaccination project team, including public health consultants and pharmacy representatives.

Service Scope

The North Highland Community Vaccination Service is to oversee the provision of all community-based adult and child vaccination procedures, either through direct administration or by sub-contracting appropriate 3rd party organisations to undertake administration on its behalf.

The service is also required to provide community wide plans and reports to demonstrate uptake of vaccinations to the require populations taking in to account geography and equality factors on its approach.

The service will provide appropriate community communication, supported by internal and external agents, to inform the public and professionals regarding the plans and intentions of the service.

Service Principles

The Service Plan is based on the following key principles:

- The service will operate to enable the highest possible uptake in all vaccination cohorts to ensure that the risk of vaccine preventable diseases and outbreaks is minimised
- A safe, effective and high-quality service will be delivered with vaccinations provided to the populous in a timely manner as close to home as reasonably practicable
- The service will be planned to operate with financial boundaries

- The service is provided to a best value model aiming for flexibility and adaptability to achieve this
- The service will review provision model against a need for inclusivity and ensure the operational delivery incorporates equality in access to services
- The service is supported by accurate and timely data collection to enable effective monitoring

Service Aim

Is to achieve the highest level of possible public vaccination in acceptance of the overwhelmingly positive public health benefits associated with vaccinations.

Current service delivery

Influenza and Covid-19 vaccinations under the national FVCV program are administered by NHS Highland from the Spring of 2022.

Adult and pre-school vaccinations are currently provided by General Practices across North Highland and transition of these services are part of the GP Modernisation Programme, this transition must be concluded by the 1st of April 2023.

School age vaccinations, as part of the lead agency model, are delivered by Highland Council. A program of work is to be undertaken to transition these services to NHS Highland upon agreeing required workforce and financial recompense.

Service Demand

Demand is model using Public Health data taken from a variety of sources, demand is highly variable and these figures represent eligible individuals as approximated from 2022 data sources

	Cohort population sizes				
	South	North	Lochaber	Skye	Ross-shire
Covid/Flu	114997	36013	20296	15000	50843
Pneumococcal	6188	2766	1155	880	2614
Shingles	10076	4754	1814	1280	4127
Pre school	4199	1302	748	346	1166
School boosters	1121	388	243	97	355
HPV	2233	795	472	194	666

Service Model

During the ongoing exploration phase of vaccination management and provision the organisation has reviewed, considered, and tested a range of operating models, these have informed our prevailing model option going forward.

A place-based locality boundary model with a hub and spoke operation was previously considered the prevailing model of provision. This model has been utilised to good effect during the pandemic vaccination roll out and remains a preferred model for mass vaccination requirements. The locality-based model provides good coverage given the wide variation in geographical/political/medical

boundaries across the Highlands created by variations in communities, Highland Council boundaries, NHS Highland boundaries and GP cluster boundaries.

However, this model when transferred to support a wider Vaccination Transformation Program (VTP) requirement fails in several regards. Mainly the model requires a significant vaccination workforce to be in place with a subsequently high financial pressure, due to the resource duplication created at a management line, the model also has not demonstrated the ability to recruit the required number of vaccinators consistently and, pivotally, it does not take full account of the paediatric requirements presented in the wider VTP as opposed to the heavily weighted adult provision required during the pandemic vaccination programs.

In consideration of these limitations Medical and Nursing professionals considered a variation in our approach which would enable a greater focus on the specific professional requirements of paediatric vaccinations and reduce the financial requirements of the workforce model, whilst providing time to determine how the service be delivered through an integrated model at the district level.

'The recommendation at this point is that the Band 7 operational leads take a portfolio based operational and oversight role, which would enable them to develop an in depth understanding of the different aspects of the programme, the challenges in delivery as well as understand the local pressures and to use that to inform future modelling. This may not be the final position as part of their role would be to better understand how the leadership skills at this level can be best used to the benefit of the service across Highland. They would also support the band 6s in local planning and delivery, training, and governance. They would take a lead role in developing what could become a network of vaccinators across north highland, such as peer vaccinators for staff clinics and key baby/childhood vaccinators in remote and rural areas and ensuring that they maintain their competencies and confidence, which may prove challenging in some cases where case numbers are low. In terms of their portfolios there are systems and processes to be developed and they would lead on this. Examples include the consenting processes for school aged children, or AWI safeguards – both areas in which we have had incidents. It should be noted that these roles have already been recruited into.' (Professional Leadership)

Operationally this will see Band 7 staff undertaking portfolio(s) of strategic North Highland wide vaccination work, working with integrated teams across the Highland Health and Social Care Partnership (HHSCP) to manage specific cohort level delivery.

In the initial phase, the vision would include, but not be limited to:

- Band 6 clinical leads, locality based. They would sit within the integrated team structure of that locality but their focus would be the VTP. They would be trained to deliver vaccinations from cradle to grave, act as clinic lead (for all clinics), deliver/coordinate local training, and with admin, Hub, and band 7 support, plan and schedule cohort clinics.
- a core group of vaccinators (band 3/5) who have been trained to deliver:
    - paediatric vaccinations – initially they may need to be mobile and cover a wider geographical area. The key to this would be the development of a network of competent vaccinators in different localities, which the band 7s will need to take a lead on.
    - School aged vaccinations (HPV and winter flu campaigns) should also include DTP/MenACWY campaign and MMR catchup.
    - Adult vaccinations (predominantly shingles and pneumonia vaccinations throughout the year and winter delivery of flu and covid vaccinations).

- A band 8a/b lead nurse to provide professional leadership, develop systems of clinical and professional governance, improvement, and service development.

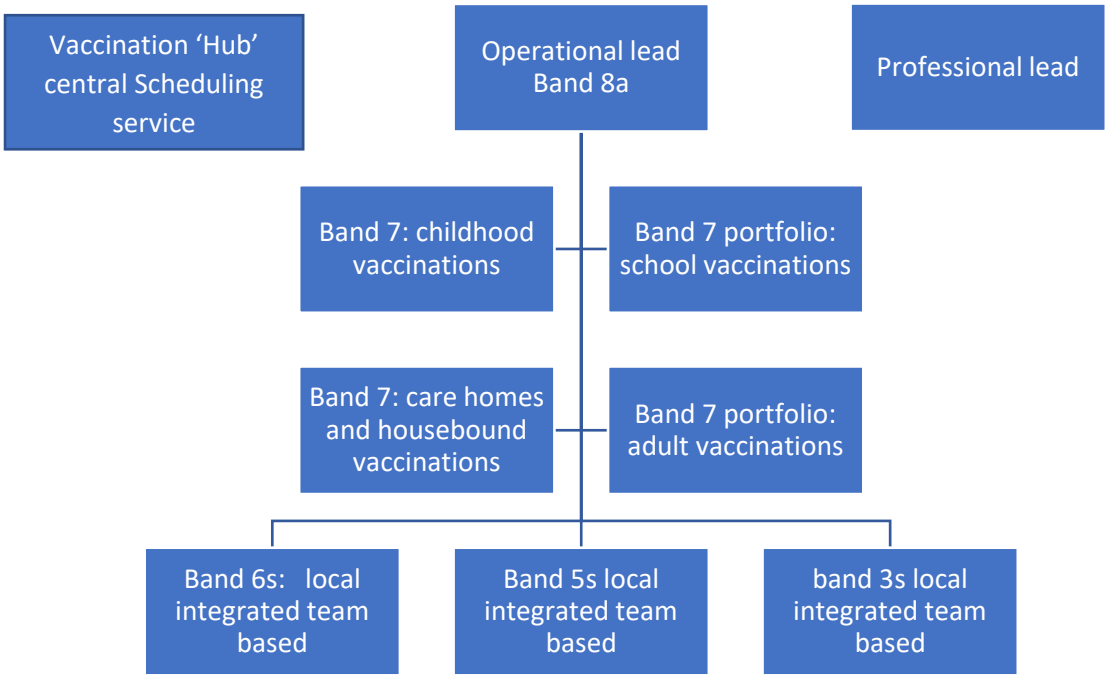
The model would aim to sit within the wider integrated team in the different localities. Community nursing teams already undertake housebound and residential care home vaccinations in some localities, and this should be standardised across north Highland.

With a focus on 'placed based care' and community health provision, the aim is to build on the relationship within the integrated teams and to identify opportunities where, by basing the vaccination workforce in the integrated teams (hence increasing the overall WTE of the combined team), this creates opportunities for cross skilling and flexible working across the integrated workforce to the benefit of both aspects of service provision. This is something that needs to be explored more fully in the coming months.

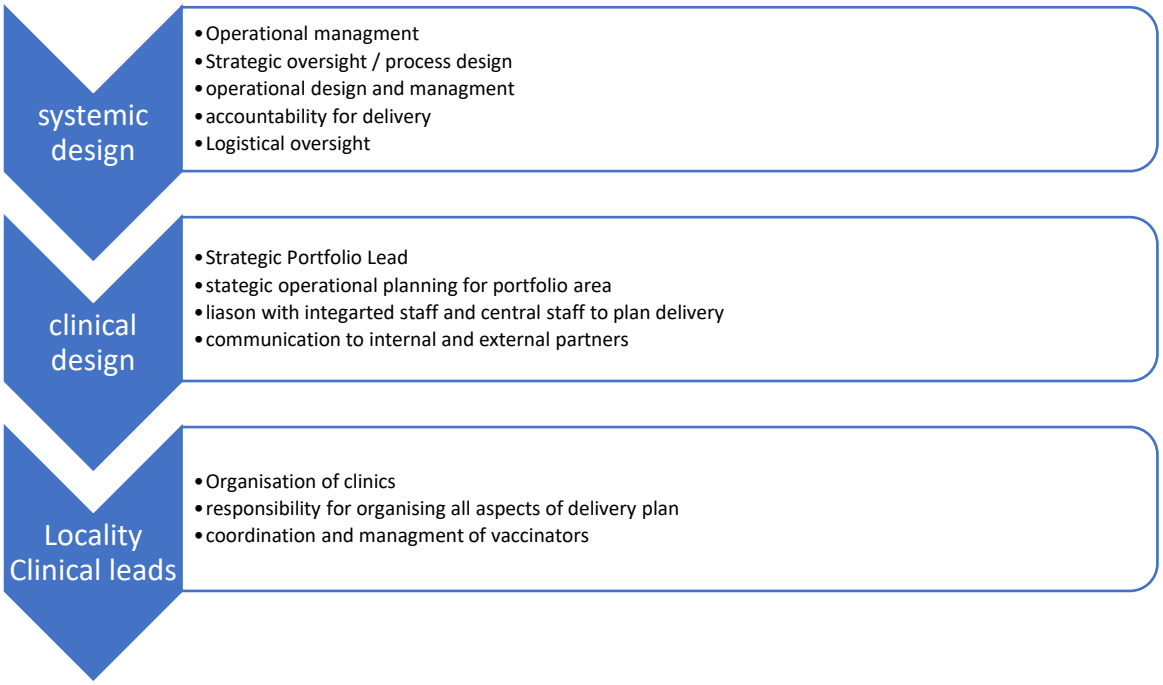
There is a further opportunity to explore how CTAC service delivery can be supported through this model. **However, this is only enabled if the recruitment to vaccination roles focused on general nursing trained individuals, as opposed to wider professional or nonprofessional qualifications.**

For peak (surge) times and in remote areas the aim is to look at the wider workforce to deliver vaccination services. This may include the RST, AHPs and practice nurse staff in the 2C practices.

This would be required during the annual influenza and covid-19 vaccination roll outs, where significant increase to vaccination workforce will be required temporarily to meet the organisations requirements regarding winter vaccination. A clear process will need to be designed and agreed so that appropriate staff can be released to the vaccination service to support population delivery during the autumn and winter months.



The diagram above shows an example of the model hierarchy, below is a role oversight of the service provision.



Staffing complement

The new model focuses vaccination service staffing on specialist core areas – such as portfolios of work and paediatric vaccination provision. This model will require some flexibility in our delivery options, such as, integrated team and specialist nursing teams providing vaccinations at specific times or in specific locations.

The model envisages that a core preschool and school vaccination team will be established, managed, and operated centrally initially with review of the longer-term approach. Adult vaccination provision will be provided by vaccinators who are embedded into the existing integrated team such as district nursing team and reviewed further to determine the long-term approach.

Vaccinator requirement is a complicated and debatable calculation. This estimate is produced by looking at current known vaccine uptake by geographical area, using GP clusters as a baseline. Uptake is then multiplied by a determined time taken for each vaccine, weighted by cohort size and averaged out over all cohorts. The required weekly hours of work are then divided to calculate WTE numbers based on an average across North Highland district teams – a weighting was required as, for example, inverness will need more vaccinator time than other districts, also a weighting is applied for rurality with rural and remote districts requiring twice the average time requirement per vaccination to account for travel distances etc. The current calculation of wte staff for recruitment is

(Assumptions: 15 min and 30 min per vaccine timings applied to urban and rural areas respectively for adults and 30 and 60 minutes respectively for preschool and school aged)

Area	District WTE	Pre School team wte	School age team wte
south	2.1	2.2	1.7
north	1.9	1.3	1.2
lochaber	0.8	0.8	0.7
skye	0.6	0.4	0.3
rossshire	1.7	1.2	1.0

This totals 17.9 wte vaccination band 5 staff – further discussion with professional colleagues is required to review potential skill mix for these groups. **The school age group vaccinations are currently provided by the Highland Council team and transition is not part of VTP or influenza/covid-19 finance, the additional finance to enable recruitment of 5 wte band staff must be discussed and agreed with HC to achieve school age vaccination transition.** From an operational perspective the pre-school and school teams will operate as a single pan highland unit in the transitionary phase.

Further operational level discussion, with integrated teams, is required to determine if band 6 staff will align within existing integrated team structures or if they should be centralised – with a constraint of a maximum number of available band 6 staff.

The model also includes budgeting for 12 wte band 5 bank staff to enable a flexible budget to support in year or mass vaccination demand levels. It will be vital in each year to maintain a high bank staff capacity especially for winter periods, a further option would be to use some of these funds to support annualised hours contracts for individuals to work specifically during the winter months.

Finance

3 models have been considered over the 6 months; Model 1 underwent estimated costing and this was put forward to Scottish Government (SG) in terms of a funding request, this is summarised as

Estimated Costs Model 1	
Pay	6,719
Estimated Pay Award	134
Non Pay	1,030
FHS Payments	20
Total Costs	**7,903**
Funding Deficit	**-2,465**

Based on the subsequent funding provision allocated by SG a funding deficit of £2.465 million existed.

Subsequently teams were asked to review model 1 funding and workforce requirements and model 2 was developed and funding is summarised as :

Estimated Costs	
Pay	5,573
Estimated Pay Award	162
Non Pay	1,030
FHS Payments	20
Total Costs	**6,784**
Funding Deficit	**-1,346**

Model 2 reduced the deficit to £1.346 million

This paper presents Model 3, which achieves a financial balance

Estimated Costs	
Pay	4,249
Estimated Pay Award	123
Non Pay	1,030
FHS Payments	20
Total Costs	**5,422**
Funding Deficit	**15**

By reducing the number of previously planned band 7, band 6, band 3 and band 2 roles we can achieve a potential financial saving of approximately £1.4 million.

Models 1 And 2 were based upon a new single central vaccination service, there was assumed economies of scale associated with a single central service, however it has become clear across the iterations of the model that less financial pressure is produced through a more integrated model. Pay costs for Pharmacy, Ehealth, Facilities, Planning & Performance, Public Health, Nursing leadership and communications have remained relatively fixed through all models.

Cost per vaccine per operational service

It is assumed that there are 350,000[1] vaccination events required in any year, which is comprised of 150,000 influenza and covid 19 vaccinations co-administered (300,000 individual vaccines) and 50,000 adult, pre-school and school age vaccinations (preschool vaccinations are multiple per individual and so are counted up for totality). *School age vaccinations are currently undertaken by the Highland Council and so their administration is not accounted for in the funding presented in this paper – meaning that further resource, growth will need to occur to absorb this additional workload.*

Removing school age vaccinations means across a year NHS highland will need to undertake, approximately, 343,500 vaccination events due to influenza, covid and the vaccination transformation program.

Model 3 can be subsequently broken down as a cost per vaccination – £15.78 per vaccination. All models can be summarised as

Model	**Total cost**	**Cost per vaccine**
Model 1	7903000	23.01
Model 2	6784000	19.75
Model 3	5422000	15.78

Target cost can be summarised as £15.83

These costs can be further broken down

[1] This number is a calculated estimate using accepted uptake rates the range is from 287,128 up to 539,799 vaccinations per year

Model	Model 1	Model 2	Model 3	Target
Total cost	£ 7,903,000.00	£ 6,784,000.00	£ 5,422,000.00	£ 5,438,000.00
Cost per vaccine	£ 23.01	£ 19.75	£ 15.78	£ 15.83
cost non-pay per vaccine	£ 3.04	£ 3.16	£ 3.16	£ 3.01
Cost Vaccination Pay / vaccine	£ 14.90	£ 11.45	£ 7.58	£ 7.65
Cost Pharmacy services pay / Vaccine	£ 1.34	£ 1.34	£ 1.34	£ 1.34
Cost facilities pay / vaccine	£ 1.69	£ 1.69	£ 1.68	£ 1.69
Cost Ehealth Pay / vaccine	£ 0.40	£ 0.40	£ 0.40	£ 0.40
Cost P&P Pay / vaccine	£ 0.54	£ 0.54	£ 0.54	£ 0.54
Cost Public Health Pay / vaccine	£ 0.48	£ 0.48	£ 0.48	£ 0.48
Cost Nursing leadership Pay / vaccine	£ 0.21	£ 0.21	£ 0.21	£ 0.21
Cost Comms Pay / vaccine	£ 0.10	£ 0.10	£ 0.10	£ 0.10

Non Pay costs

Non Pay costs are summarised as

	NH	
Sundries	80,000	Estimate for all vaccinations, ledger info for 21/22 incomplete
Travel	111,000	1 pool car per locality and 2000 miles per annum for registered nursing WTE
Subsistence & Staff Accommodation	24,000	Accommodation in Skye
Vaccine Clinic Venues	369,000	Long term some leasing of premises is anticipated & not fully estimated as costs unknown. Estimate includes utilities
Vaccine Transport		estimated costs associated with HMRA compliant transport from GGC & supply from Belford of Covid vaccine
Digital Technology	228,000	NH based on original costing includes IT & mobile phones and MS365 Licences
Pharmacy Supplies	50,525	Excludes costs of new cool room planned for Raigmore, 2 exisitng portacabins and designated parking area (these costs TBC
Travel Vaccinations	102,240	Plus 12k non rec costs
Comms	60,000	
Estates Costs		
Stationery	5,000	will include other misc small value expenditure
	1,029,765	

These costs have not been altered between models based on an assumption that, relatively, non-pay costs, although spent differently, would remain the same.

Administration roles

The service requires a high degree of administration from direct clinic provision through to national liaison for population level appointment letter generation. Also, a significant degree of large complex data set analysis and planning is required to support portfolio leads in service planning. Clinical administrative support we envisage will be at local level embedded in in the locality-based teams, however wider planning and scheduling administration is seen as a central function undertaken by the vaccination service central hub and in cooperation with the portfolio leads as required.

IT roles

The service requires a high degree of dependency on national clinical vaccination systems and data reporting systems supported by eHealth roles. NVSS, VMT, NSS GP Backfill Tool, SEER and NCDS are mission critical systems hosted nationally with local technical support and user administration requirements. IT roles within the eHealth department are responsible for providing the large complex data sets to administration and management roles and data quality. These requirements exist regardless of the operational model and are a relatively fixed requirement of the services provision.

External contractors

The provision of such a service to a geographical area as vast as the Highlands, against a backdrop of complicated public transport and appropriate venue identification, means that there is a high

relative financial cost to the provision of some vaccination service to specific geographical areas due to the volume of patients and fixed costs of staff transportation, facility appropriation etc. A best value approach is to be always considered by the service. It is therefore evident that there will be locations and opportunities to provide better value to the community by contracting external agents to administer vaccinations at certain times. This will require contractual discussion and negotiation with potential providers for comparison to direct service provision costs. An example may be pharmacies providing direct vaccinations or General Practice providing prescriptions for nursing home residents so nursing home can provide direct delivery of required vaccinations.

Facilities

The service will require a wide geographical spread of bookable clinical spaces to be utilised for clinical administration of vaccines, it is envisaged that this would be possible in existing NHS Highland facilities.

Storage and office space would also be required for each locality team to operate services, which is assumed to be shared with other services.

Venues will need to be acquired, through short term rental, to support mass vaccination services during the autumn and winter.

Further work with NHS Highland facilities and estates teams is required to identify all possible locations and venues that are available to the teams.

Cold-Chain

The cold-chain requirements of vaccinations are a specifically complicated area of operational requirement. 4 potential options have been identified; however, all have specific advantages and disadvantages that must be considered, this mainly has an affect during the autumn and winter when vaccination delivery requirements will be extremely high for covid-19 and influenza immunisation programs being active and the potential for over 200,000 doses being delivered.

1. Direct delivery to vaccination locations via National Procurement (NP) and/or local VHCs (Vaccine Holding Centres in Raigmore, Belford and Caithness)– this would require vaccine fridges checked twice daily for temperature adherence and monitored during the year. As an example, the service utilised over 40 vaccination locations during the spring campaign. Locality based delivery in the form of a central locality hub would mean a location that is potentially staffed 5 days a week by vaccination service staff which would increase financial staffing costs. Locked locations with remote monitoring of fridges are an option that could be explored with staff available for receipt of stock as required.
2. Direct Delivery to NHSH community hospitals (forming de facto hubs) via NP and/or local VHCs. Like vaccination locations - this could mean once weekly non specialist vaccination staff, most likely ward staff receiving and signing for vaccine delivery, ensuring its appropriate storage and daily temp. recording. Considering the high pressure on community wards during the autumn and winter months this may add a significant burden on wards with low staffing. It is possible that non nursing staff such as receptionists or porters could accept delivery and a process to scope and define this would be required. The risk of poor record keeping or mishandling of deliveries could result in thousands of doses being unusable.
3. Delivery to centralised pharmacy services only via the VHCs with transportation out to teams – this option would place a significant addition volume-based burden specifically during autumn/winter on the central pharmacy teams impacting on workload and space, incurring

additional cost. Also, transportation services are unavailable during the weekends and during the winter plan when multiple weekly weekend clinics are planned.

4. Direct Delivery via NP and/or via the VHCs to locality based external agents– contracting with specific General practices or pharmacies with access agreements would provide a wider geographical range of delivery options although would incur an additional financial implication. Monitoring of the fridges and cold chain processes would need to be included in this agreement, regular audit by the Board would also need to be built in. Additional fridge capacity for vaccine and cool packs would be required and space for vaccine porters would also be required in these sites.

At this time the service would recommend a further exploration of option 4 as the best value approach; with subsequent specific discussion and agreement on autumn/winter vaccination delivery models undertaken to determine the best value approach.

Governance

This document is now to be reviewed for approval by:

- Vaccination Transformation Project Team - 11 July 2022
- Senior Leadership Team – 13 July 2022
- NHS Highland Board – 13 July 2022

This document is also to be reviewed and noted by

- General Practice Modernisation Board

Next Steps

Was the document has been finalised and approved a project work breakdown schedule and network diagram will be devised and actions allocated as appropriate within the Vaccination Transformation Project Team.

Further operational discussion at the North Highland Senior Management Team meeting will also be required.