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# **Roll out of the Human papillomavirus (HPV) vaccine roll out to schools**

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**SECTOR: HEALTH**

**PUBLIC EXPENDITURE AND POLICY ANALYSIS**

## *Mini Spending Reviews*

Roll out of the Human papillomavirus (HPV) vaccine roll out to schools

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## **List of abbreviations / Glossary**

BAS	Basic Accounting System
ECD	Early Childhood Development
EMIS	Education Management Information System
HPV	Human papillomavirus
MTEF	Medium Term Expenditure Framework
PERSAL	Personnel Salaries System
SCOA	Standard Chart of Accounts
STI	Sexually Transmitted Infection (STI)
FTE	Full Time Equivalent

Schools Realities is an annual publication of the number of girls and boys per province by grade.

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## Introduction

The Human papillomavirus (HPV) vaccine programme involves the administration of two doses of the vaccine given six months apart, to all girls attending public schools between the ages of 9 and 12.

This is carried out through a partnership between the provincial Departments of Health and Departments of Education.

Three expenditure reviews have been carried out since the implementation of the programme:

- Kerusha Pillay - HPV Vaccine Programme
- Sehunelo Thapelo review of HPV rollout in the Northern Cape
- Raymond Maleka review of HPV rollout in Gauteng

This document summarises the findings of the above reviews; reviews performance and other information on the programme that is published in conditional grant frameworks and conditional grant reports; and describes a costing model of the HPV vaccine roll out and the results of the costing.

Brief recommendations are provided regarding the way forward.

**The programme is achieving its objectives, there are no obvious opportunities for or need to reduce costs. Consideration should be given to ending the conditional grant and transferring the funds to the provincial equitable share.**

## Why girls are targeted at primary school

HPV is a sexually transmitted infection (STI). HPV can cause cervical cancer and cancers of the vulva, vagina, penis, anus and throat. Cancers caused by HPV can take decades to develop. However, many people with HPV do not develop symptoms and are therefore not aware they may be infecting others through sexual contact. A vaccine that prevents the transmission of HPV strains is an effective way to prevent the spread of the virus and therefore prevent the need to invest health resources into its treatment.

The HPV vaccine programme involves the administration of two doses of the vaccine given to girls in Grade 5 over the age of 9 years. Currently the programme is implemented through two campaigns each year. The first round of doses is usually administered in February and March and the second campaign is from, August to September. The gap between the two campaigns is sufficient time to ensure each girls receives their doses six months apart.

Because HPV is a sexually transmitted disease, the ideal age for vaccination is before sexual debut and as a result, the vaccine had been approved to be administered to 9 and 10-year-old girls. When the programme started, Grade 4 girls were targeted. Since 2020/21 the programme has targeted Grade 5 girls. The reason for the change is that a large proportion of Grade 4 girls have not turned 9 before the end of the grade year and therefore are not eligible for the vaccine. Targeting Grade 5 means a much smaller proportion of girls are too young to be vaccinated, than is the case if implemented to Grade 4s.

## How the programme is implemented

The programme is implemented through a partnership between the provincial Departments of Health and Departments of Education. The programme is a collaborative effort between the departments of health and education.

**The annual steps in the programme are as follows:**

1. Towards the end of the school and calendar year, the National Department of Health and National Department of Education agree on the dates for the two campaigns in the following

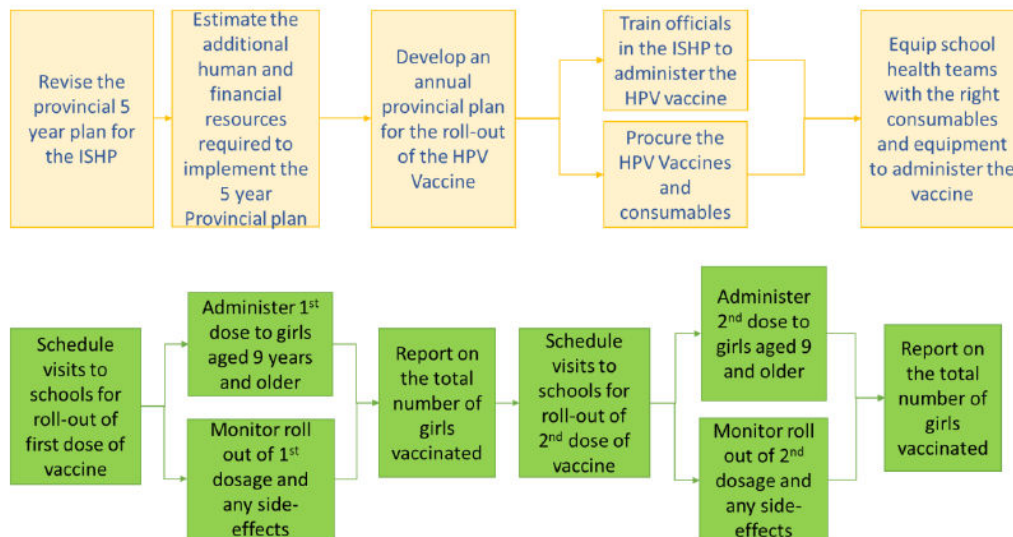
## HUMAN PAPILOMAVIRUS (HPV)

year. The departments agree to restricting all implementation activities to between those dates.

2. The Provincial Departments of Education provide data to the National Department of Education on the number of girls in Grade 5 in public and special schools.
3. The National Department of Health uses the data to inform an order with suppliers for the HPV vaccine for each province according to the data provided.
4. At the start of the school year, schools are provided with consent forms that Grade 5 girls must take home to be signed by a parent or guardian and returned to the school.

In the first year of implementation over 3 000 health workers and teachers were trained on cervical cancer and how to administer the vaccine and manage the programme logistics, including reporting. Similar training is provided every year to the school vaccination teams. The figure below shows the chain of delivery in Gauteng (Raymond Maleka spending review).

**Figure 1 Chain of Delivery in the HPV Vaccine Roll Out**



An important part of the programme roll out is the circulation of consent forms to parents by the schools. These are to be signed by the girls' guardians and returned to the schools. The consent indicated through these forms (i.e. the number of girls for whom consent to receive the vaccine is given) is used to inform budgeting and scheduling of the HPV roll out. If a girl's signed consent form is not returned to her school, then she will not be legible to receive the vaccine.

**Figure 2** below presents the logical framework for the HPV vaccine roll out, as per the report prepared by Kerusha Pillay.

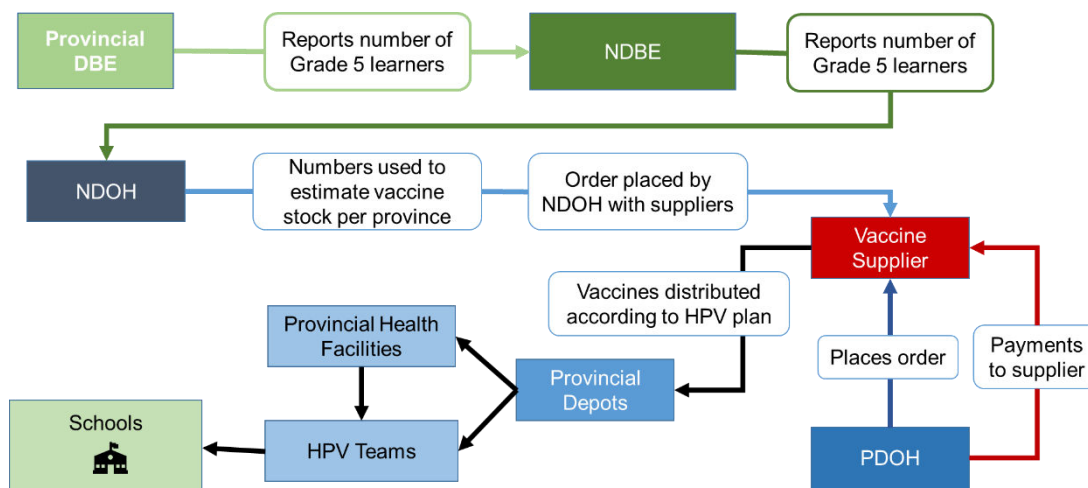
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**Figure 2 Logical Framework for the Implementation of the HPV vaccine**

Impacts	Towards the realisation of a long and healthy life for all South Africans		
Outcomes	HPV vaccine coverage		
Outputs	Grade 4 girls in the poorest 80 percent of public schools receive 2 doses of the HPV vaccine within 6 months		
Process / Activities	Refining of HPV vaccination policy	Develop implementation plan for the HPV vaccination rollout for both doses	Cost the HPV programme
Process / Activities	The HPV vaccination team receive relevant training regarding the various areas of the HPV vaccination process	Vaccination consent forms and information packs are sent to parents	Consent forms are signed and returned timeously to each school
Process / Activities	Administer the first HPV vaccine dose in March/April	Accurately capture data on electronic tablets	Keep a record of the girls that receive the first vaccine dose
Process / Activities	Administer the second HPV vaccine dose in September/October	Accurately capture data on electronic tablets	Ensure the girls that received the first dose, also receive the second dose within the 6 month period
Inputs	Procurement and cold storage of the HPV vaccines	Expenditure invoices sent to the national department for payment to be made	Adequate HPV programme funding in future years
Inputs	Retired nurses, student nurses and contractors hired	Employment contracts awarded	No skills shortages and prices remain stable
Responsibility	PR3: HIV and AIDS, TB, Maternal & Child Health	PR3: HIV and AIDS, TB, Maternal & Child Health	PR3: HIV and AIDS, TB, Maternal & Child Health
	National Department of Health		
Current Programme Elements	Develop / refine HPV policy	Refine HPV implementation strategy	Cost HPV implementation strategy

The figure below shows the flow of events in the implementation of the programme. This was developed after reviewing the existing expenditure reviews and holding discussions with the conditional grant manager at the National Department of Health.

**Figure 3 Process flow of the HPV vaccine programme implementation**



## The evolution of the HPV conditional grant funding

When formal funding for the programme started in 2014, funding was allocated through the indirect National Health Insurance Grant: Human Papillomavirus (Indirect Grant Component), as well as from the voted funds for the National Department under their Programme 3: HIV and AIDS, Tuberculosis, and Maternal and Child Health budget.

In 2018/19 the funds were transferred to a new direct grant to provinces called the Provincial Human Papillomavirus Vaccine Grant. In 2019/20 the conditional grant framework indicated that from the 2020/21 financial year grade five girls would be targeted. This was in response to a recommendation by the National Advisory Group on Immunisation (NAGI) of changing the target to Grade 5 learners.

In 2020/21 and 2021/22 HPV funding was one of 8 components of the HIV, TB, malaria, community outreach grant. There is a separate grant framework for each component of this grant and the allocations per component are shown in Appendix W7 to the Division of Revenue Act.

In 2022/23 HPV funding is allocated through the District Health Programmes Grant: District Health Component, which is one of two components of the District Health programmes grant. Provinces

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also receive funding for malaria programmes, community-based care and ward based primary health care teams and allocations for Covid-19 through this component of the grant.

As the structure of the conditional grant has changed, the exact wording of the purpose grant has also changed. However, this purpose statement from 2019/20 accurately captures the what the funding should achieve:

- *To enable the health sector to prevent cervical cancer by making available HPV vaccinations for grade five school girls in all public and special schools and progressive integration of Human Papillomavirus (HPV) into the Integrated School Health Programme (ISHP)*

Note the emphasis on integration of the HPV programme into the school health programme. The outputs of the grant provide a good description of what the grant is intended to achieve.

- *80 per cent of grade five school girls aged 9 years and above vaccinated for HPV first dose*
- *80 percent of schools with grade five girls reached by the HPV vaccination team with first dose*
- *80 per cent of grade five school girls aged 9 years and above vaccinated for HPV second dose*
- *80 per cent of schools with grade five girls reached by the HPV vaccination team with second dose*

Despite the changes to how the funding has come through different types and components of conditional grants, the only significant change in the above performance indicators since the start of the programme is the change from Grade 4 to Grade 5.

The conditions are a good description of the process that provincial departments of health are required to follow:

- *Completion of the business plan in the prescribed format determined by the national Department of Health (DoH), signed and submitted by each receiving officer to the transferring officer by 26 February 2021 and submitted to National Treasury by 31 March 2021*
- *Ensure provinces include HPV vaccination indicators in provincial annual performance plans*
- *Grant funding must be used to strengthen capacity in provinces to manage the programme*
- *Social mobilisation to promote the uptake of the HPV vaccination to prevent cervical cancer should be done as part of the ISHP (integrated school health programme).*

The national department of health remains responsible for managing the contracts for HPV vaccines and supporting information systems, as well as strengthening the capacity of provinces to deliver the programme.

According to the 2021/22 conditional grant framework, 100% of the grant was spent in 2019/20 and the following service delivery performance was achieved:

- *87.5 per cent of grade four schoolgirls aged 9 years and above vaccinated for HPV*
- *92.4 per cent of schools with grade four girls reached by the HPV vaccination team*
- *76.7 per cent of grade five schoolgirls aged 9 years and above vaccinated for HPV*
- *84.7 per cent of schools with grade four girls reached by the HPV vaccination team*

These do not align directly with the target outputs for the grant, but the only target not achieved are percentage of girls 9 years and above in Grade 5 that are vaccinated (76.7%). It is assumed the vaccination rate in grade four is higher because there are fewer girls over the age of 9 in grade 4 than there are in Grade 5. There is presumably a typing error in the bottom performance measure and it should refer to the percent of schools with grade five girls reached. It is strange that there is such a big difference between the number of schools with grade four girls reached (92.4%) compared with the same indicator for the number of schools with grade fives (84.7%). All schools that have grade four girls should also have grade 5s.

The only performance indicators reported against in the 2020/21 conditional grant in common is the per cent of schools reached, which has improved. In 2020/21 the performance indicators refer to the percent of girls receiving 1 dose and those receiving 2 does, but not by grade. Therefore, the coverage in terms 9-year-old girls vaccinated, in aggregate, cannot be compared. Coverage appears to be similar in both years, but the data cannot be used to assess whether the lower vaccination rate in Grade Five verse Grade Four is a trend or not.



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According to the 2022/23 conditional grant framework, “80.6 per cent grade five schoolgirls aged nine and above vaccinated for HPV” and “93 per cent schools with grade five girls were reached by the HPV vaccination team” during the 2021 school year. The programme is achieving its objectives.

The history of the programme and the conditional grants through which funding has flowed is shown in the table below.

**Table 1 Summary of the evolution of the HPV programme**

Year	Comments
2014/15 to 2017/18	<ul style="list-style-type: none"> <li>- Launched in 2014 as a collaborative programme between health and education sectors</li> <li>- Funds were transferred through <b>National Health Insurance Grant</b> (which is an indirect grant)</li> <li>- Programme was funded off Budget Programme 3 on the NDOH budget</li> <li>- Distribution of medicines to provincial DOHs for implementation</li> <li>- Target was <b>80% of Grade 4 Girls</b> over the age of 9</li> </ul>
2018/19 and 2019/20	<ul style="list-style-type: none"> <li>- New <b>Provincial Human Papillomavirus Vaccine Grant</b> (direct grant transferred to and implemented by provinces)</li> <li>- Purpose: to enable the health sector to prevent cervical cancer by making available HPV vaccination for grade four schoolgirls in all public and special schools</li> <li>- Target: 80 per cent of grade four girls aged 9 and above vaccinated for HPV</li> <li>- 2019/20 framework signalled that from 2020/21 the grant would target Grade 5s (most girls turn 9 in Grade 4, so changing the target increased the number of girls that are legible)</li> </ul>
2021/22 and 2021/22	<ul style="list-style-type: none"> <li>- HPV funds transferred through <b>HIV, TB, Malaria and Community Outreach Grant – HPV component</b> (one of 8 components of the grant)</li> <li>- Target since 2020/21 has been 80 per cent of <b>Grade 5 girls aged 9 and above</b> vaccinated for HPV</li> <li>- Allocations for the grant are shown in the appendix to DoRA, but not in the schedules.</li> </ul>
2022/23	<ul style="list-style-type: none"> <li>- HIV, TB, malaria, community outreach grant changed to <b>District Health Programme Grant</b> with two components: <ul style="list-style-type: none"> <li>o Comprehensive HIV/AIDs Component</li> <li>o <b>District Health Component</b> (HPV is a sub-component of this)</li> </ul> </li> <li>- HPV allocations shown in the grant framework, but not in schedules of appendixes to DoRA.</li> <li>- Provinces are required to link allocations to the objective segment in BAS</li> </ul>

**Table 2** shows the annual allocations through provincial conditional grants for the HPV programme.

**Table 2 Conditional Grant Allocations for the HPV Programme 2018/19 to 2022/23**

Amounts in R 000s	HPV Grant		HPV Component			Annual Average Growth
	2018/19	2019/20	2020/21	2021/22	2022/23	
Eastern Cape	33 471	35 345	37 289	36 861	37 646	3.0%
Free State	11 608	12 258	12 932	12 784	13 056	3.0%
Gauteng	27 312	28 841	30 427	30 077	30 718	3.0%
KwaZulu-Natal	44 976	47 495	50 108	49 533	50 587	3.0%
Limpopo	27 471	29 009	30 604	30 253	30 897	3.0%
Mpumalanga	17 665	18 654	19 680	19 454	19 868	3.0%
Northern Cape	4 634	4 894	5 164	5 105	5 213	3.0%
North West	13 264	14 007	14 777	14 607	14 918	3.0%
Western Cape	19 599	20 697	21 835	21 584	22 044	3.0%
	<b>200 000</b>	<b>211 200</b>	<b>222 816</b>	<b>220 258</b>	<b>224 947</b>	<b>3%</b>

Despite the changes to how the funding is classified, funding for the HPV has functioned as a conditional grant. The National Department of Health has been the transferring officer, provinces have been required to prepare plans for the grant and submit reports on grant expenditures and non-financial performance of the programme.

Since 2018/19 the grant has grown at annual average of 3% per year from its neat starting amount of R200 million. This growth has been moderate, but in line with the growth in budgets during this

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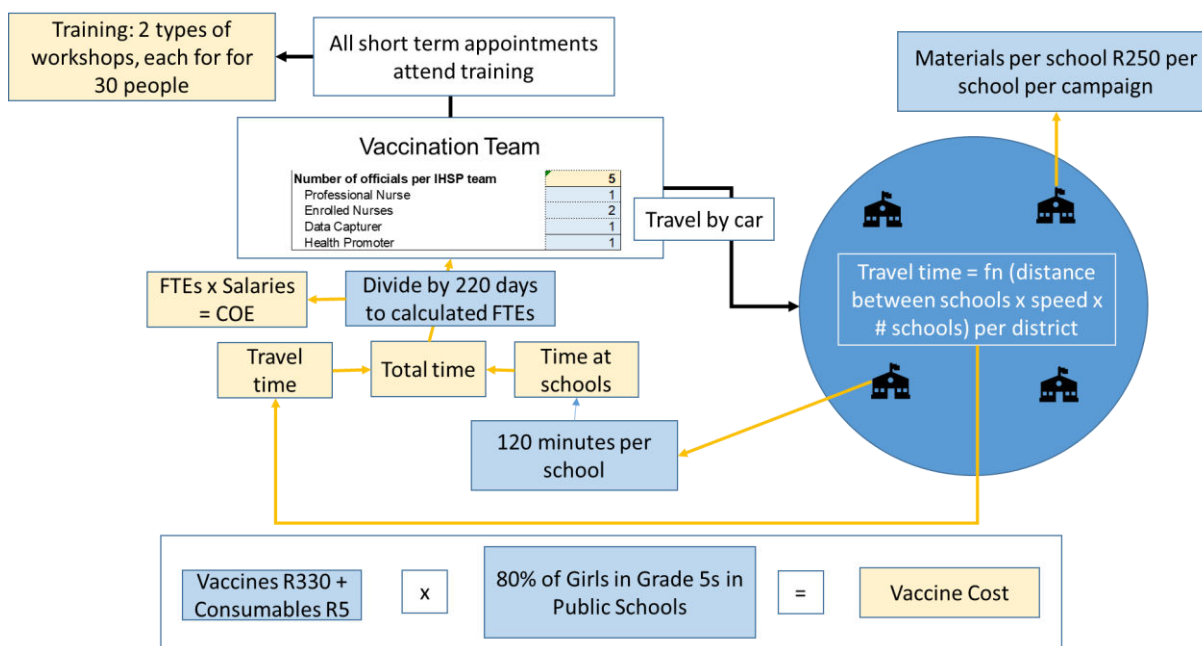
period. Growth has also been uniform across provinces, despite the small relative changes in numbers of eligible girls per province.

## Costing the HPV programme

The costings that were part of the spending reviews combined expenditure data and performance data to make a few projections. Strictly speaking they were not policy costings of the programme. Therefore, a new costing model of the programme was developed, which is discussed below.

Figure 4 below shows the components of the costing model. These are discussed below.

Figure 4 Overview of the Costing Methodology for costing the HPV Programme



## Numbers of schools and girls

The following data sources were used to estimate the number of schools, girls at school and distance between schools.

The **Schools Realities** from 2017 to 2021 (Females at Public Schools) was used to calculate the number of **schools girls that** should receive the HPV vaccine.

The **National Ordinary Schools Master and Special Needs Education list** for Quarter 4 2020: March 2021 were used to calculate the **number of schools per province**. All primary, intermediate and combined public ordinary schools were included, and all public schools listed in the special needs database were included (it is assumed the number of pupils at these schools are counted in the Schools Realities).

Table 3 below shows the total number of girls in public schools in Grade 4 in 2017 and 2018 and Grade from 2019 to 2021.

Table 3 Females in Public Schools

	Grade 4		Grade 5		
	2017	2018	2019	2020	2021
Eastern Cape	72 645	72 544	71 811	70 017	69 312
Free State	29 643	29 661	28 388	28 256	28 238
Gauteng	97 567	95 622	91 994	92 337	91 435
KwaZulu-Natal	112 573	111 108	109 498	107 374	106 952
Limpopo	67 098	66 868	64 626	63 340	65 244
Mpumalanga	43 367	43 097	42 167	42 078	41 550
Northern Cape	12 644	12 793	12 250	12 227	12 069
North West	35 885	35 983	34 963	34 506	33 980
Western Cape	50 237	53 248	50 998	51 794	50 692
	<b>521 659</b>	<b>520 922</b>	<b>506 695</b>	<b>501 929</b>	<b>499 472</b>

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The programme targeted Grade 5 girls from 2020/21 and in that year the number of girls in Grade 5 in 2019 were used for planning the programme. In the previous two years the programme targeted Grade 4 girls.

It is noticeable that there is a large decrease in the total between 2018 and 2019, which presumably is a result of the dropouts between Grade 4 and Grade 5. The above data also suggests a downward trend in the number of girls in Grade 5. Not shown above, but fewer girls were in Grade 5 in 2017 than in 2021. The above year on year changes are close to a 1% per cent annual decline. Therefore, the total cost of the programme should slowly fall. **The HPV programmes targets 80% of the above girls – therefore the cost estimates below show the cost of reaching 80% of girls with 2 doses**

While the number of schools changes slightly each year (a few provinces reported on visiting schools that had closed since the previous campaign) this number is assumed to be negligible and therefore only one year's data was used.

### **Vaccine and consumable material costs**

The price of vaccines was obtained from the National Department of Health.

A price of R330 for a double dose per girl was used in the costing. This is the price of a vial containing two doses of the vaccine.

Needles, syringes and wipes per girl cost R5 (this is R2.50 each time they receive an injection).

Other consumable materials, such as gloves, education materials, waste buckets, ice, masks and aprons cost R250 per school.

### **Travel assumptions**

The **Atlas of Education Districts in South Africa**, prepared by the Department of Basic Education and UNICEF in 2013, was the source of data on the geographical area (km<sup>2</sup>) of education districts. However, as district names have changed and districts in some provinces have been merged, as well as inconsistencies between district names in some data sets (especially in North West) a few data sets were compared to develop a list of education districts that could be aligned with the Atlas of Education Districts and the Schools Lists (Ordinary and Special Needs Schools Master List).

Data in PDF files were converted to Microsoft Excel and school names and EMIS were used to match district names across Schools Master list from 2013 and 2020 as well as the 2020 National Senior Certificate School Performance Report (Department of Basic Education). The size of districts that existed in North West in 2013 were used to calculate travel distances and times in that province (there were 4 districts in 2013, there are 15 in 2021). This does affect the results for North West, but the impact is relatively small.

There are a few components to estimating the resource requirements related to travel.

**The distance** in kilometres travelled is calculated as follows:

1. The number of schools per district were estimated using EMIS schools list, the Atlas of Schools Districts and the NSC reports, as discussed above.
2. The size of the districts from the Atlas of Schools Districts was used to estimate the area in km<sup>2</sup> around each school.
3. The diameter of this radius is the linear distance between each school.
4. The linear distance is converted into a distance travelled by increasing the linear distance by a percentage value. In more densely populated districts this percent value should be higher and this is a variable that can be changed in the model.
5. For each district, the total distance travelled is the distance travelled per school (as per 4) multiplied by the number of schools per district.

It is assumed each HPV team travels to schools in the same car, so the distance travelled was multiplied by a maintenance and fuel cost per kilometre to calculate the total travel cost.

Time spent travelling was estimated by applying travel speeds to the distance travelled. This average speed can be changed for each education district (a faster speed is used in Northern Cape than in Gauteng for instance).

## Time at Schools

It is assumed that the HPV teams spend 2 hours at each school and have 6 hours per day to run the campaigns. The costing model has functionality to increase the 2 hours, which can be varied by district and only applied to a portion of schools per district.

## Composition of the HPV Team

The composition and number of people in the HPV teams used in the baseline cost estimates are shown in **Table 4** below.

**Table 4 HPV teams**

Position in Team	Occupation Classification	Number per team	Estimated Salary
Professional Nurse	Professional Nurse	1	R 519 268
Enrolled Nurses	Nursing Assistants	2	R 241 815
Data Capturer	Auxiliary And Related Workers	1	R 150 892
Health Promoter	Auxiliary And Related Workers	1	R 150 892

The occupational classification and the number of people per team can be changed. The estimated salary is based on the occupation classification selected, which is drawn from PERSAL.

The total number of officials is calculated as follows:

1. Total time at school and total travel time (as discussed above) is calculated.
2. This total time is divided by the number of hours available to visit schools per day (6 hours) to estimate the total number of days needed
3. The total number of days needed is divided by 220, which is the estimated number of full-time days officials work.
4. This estimates the number of full time equivalent (FTE) teams required.
5. The number of full time staff required is calculated by multiplying the type of staff per team by the full time equivalent (as per number 4).

The result of the above calculations shows the total number of people required to work on the programme if it were a full-time programme (i.e. implemented year round). However, as the programme is implemented during two time limited campaigns and therefore only runs for 60 working days per year the FTE amounts need to be multiplied by 3.67 (220 days worked per year divided by 60 days for the campaigns) to calculate the number of people that need to be hired on a short-term basis for the campaigns.

## Training

Training is provided to members of the HPV teams. Two streams of training are costed: one for medical practitioners (nurses and enrolled nurses) and the other for clerical staff (data capturers and health promoters). The cost of a workshop is based on the number of participants. The model includes assumptions related to the workshop inputs (number of participants, cost of facilitators, venue hire, catering, training materials etc).

The baseline number of participants in a workshop is 30. It assumed that every year, all members of the HPV teams are trained. Therefore, the total number of workshops for medical staff required per province is calculated by dividing the total number of medical staff by 30 and the number of workshops for clerical staff is calculated in the same way.

The model is set up so that users can change which team members attend which type of workshop, including all team members attending the same type of workshop (i.e. just require one set of training workshops).

## Costing Results

### Number of schools with Grade 5 Girls

**Table 5** below shows the number of public schools per province used in the costing estimates. It is assumed that all primary, combined, intermediate and special needs schools are visited. This data

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is taken from EMIS and the Schools Realities data. these are compared to the number of schools reached by each province through the HPV campaign.

**Table 5 Schools with Grade 5s**

	Public Schools that have Grade 5s in EMIS					Schools Reached by provinces (CG Report)	
	Primary	Combined	Intermediate	Special Needs	EMIS Total	As % of EMIS total	
Eastern Cape	3 257	1 099	-	44	<b>4 400</b>	4 323	98%
Free State	599	57	136	23	<b>815</b>	673	83%
Gauteng	1 396	14	44	141	<b>1 595</b>	1 479	93%
KwaZulu-Natal	3 826	389	-	75	<b>4 290</b>	4 032	94%
Limpopo	2 344	58	13	35	<b>2 450</b>	2 322	95%
Mpumalanga	965	195	51	16	<b>1 227</b>	1 111	91%
Northern Cape	313	20	95	11	<b>439</b>	401	91%
North West	980	52	-	32	<b>1 064</b>	1 017	96%
Western Cape	1 008	34	62	73	<b>1 177</b>	1 082	92%
<b>Total</b>	<b>14 688</b>	<b>1 918</b>	<b>401</b>	<b>450</b>	<b>17 457</b>	<b>16 440</b>	<b>94%</b>

The number of schools estimated using EMIS is slightly different to the number of schools reported in the conditional grants (*As % of EMIS total* in **Table 5 Schools with Grade 5s** is the number of schools reached by provinces as a percent of the number estimated in the costing model). The source of the difference could not be established. In aggregate, the number of schools reached by provinces is 94% of the number used in the costing.

The biggest difference is in the Free State, which reaches 83% of the schools recorded in the data sets. This is more likely to be due to more schools been reported in the data than there actually are. The number of schools per province is not a major cost driver according to the cost model, so the above variances do not have a large impact on the results.

## Summary of Costing Results

Table 6 below shows the cost of implementing the HPV programme in 2022/23 based on the assumptions described above. The total for provinces is R223 million, which is extremely close to the total allocation for the grant of R224 million 2022/23.

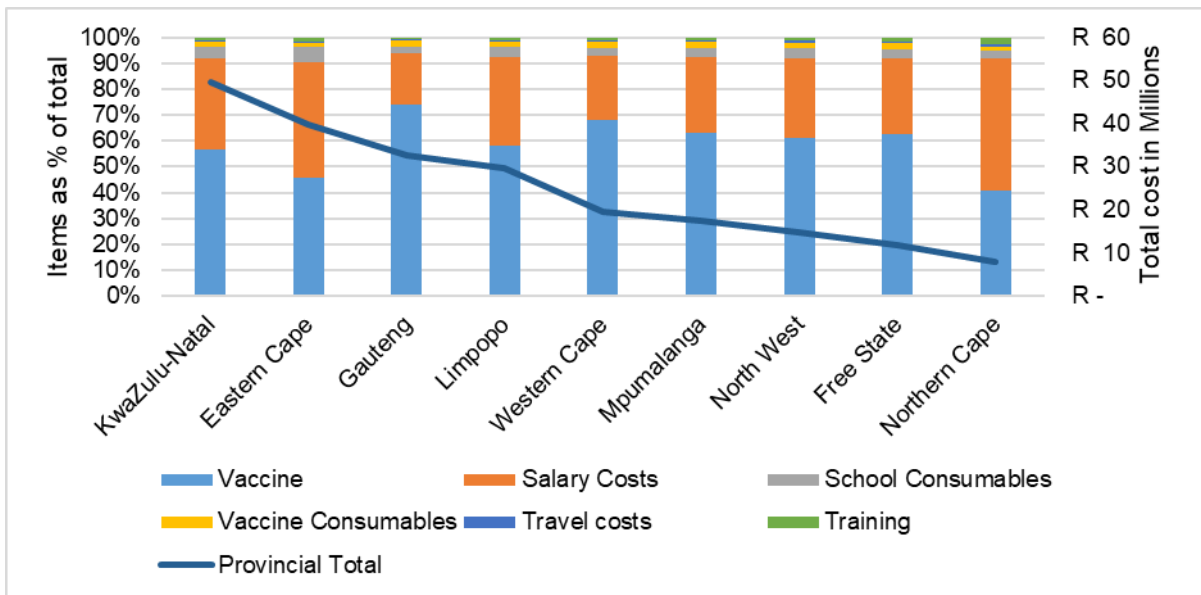
**Table 6 Estimated Cost of the HPV programme**

<i>R 000s</i>	Vaccine	Salary Costs	School Consumables	Vaccine Consumables	Travel costs	Training	Provincial Total
Eastern Cape	R 18 298	R 17 981	R 2 200	R 693	R 216	R 595	<b>R 39 984</b>
Free State	R 7 455	R 3 520	R 408	R 282	R 81	R 181	<b>R 11 926</b>
Gauteng	R 24 139	R 6 419	R 798	R 914	R 44	R 234	<b>R 32 546</b>
KwaZulu-Natal	R 28 235	R 17 434	R 2 145	R 1 070	R 175	R 595	<b>R 49 654</b>
Limpopo	R 17 224	R 10 184	R 1 225	R 652	R 112	R 298	<b>R 29 696</b>
Mpumalanga	R 10 969	R 5 148	R 614	R 416	R 88	R 181	<b>R 17 415</b>
Northern Cape	R 3 186	R 4 031	R 220	R 121	R 92	R 181	<b>R 7 830</b>
North West	R 8 971	R 4 551	R 532	R 340	R 98	R 181	<b>R 14 671</b>
Western Cape	R 13 383	R 4 886	R 589	R 507	R 82	R 181	<b>R 19 627</b>
	<b>R 131 861</b>	<b>R 74 153</b>	<b>R 8 729</b>	<b>R 4 995</b>	<b>R 988</b>	<b>R 2 625</b>	<b>R 223 349</b>

The biggest items are the vaccines and the salary costs, which in aggregate account for 92% of the total cost estimates. The figure below presents the above costs graphically.

HUMAN PAPILOMAVIRUS (HPV)

**Figure 5 Composition of Costs of the HPV Programme**



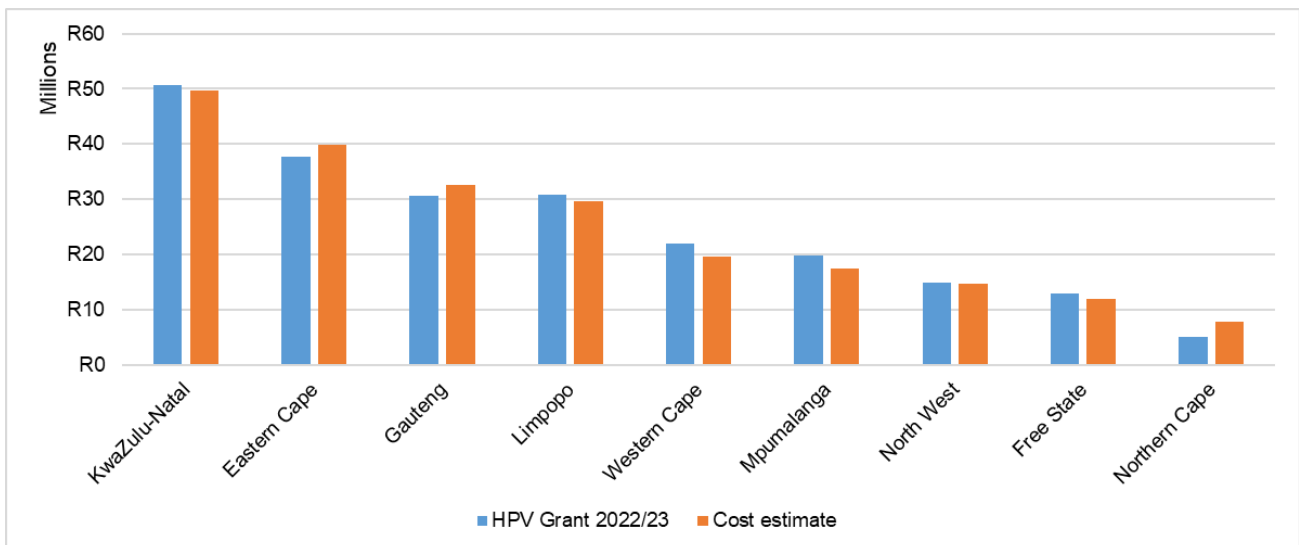
“Vaccine consumables” refer to the consumable costs per dose of vaccine administered. “School consumables” refers to the consumables used per school.

The estimates suggest that Northern Cape and Eastern Cape should spend proportionally more on salaries than all other provinces. In Eastern Cape this is due to the province having smaller and therefore relatively more schools than other provinces. In the Northern Cape this is driven by time spent travelling between schools.

below compares the HPV grant allocation for 2022/23 to the cost estimates of the programme per province.

**Figure 6** below compares the HPV grant allocation for 2022/23 to the cost estimates of the programme per province.

**Figure 6 Grant Allocations per province compared to cost estimates**

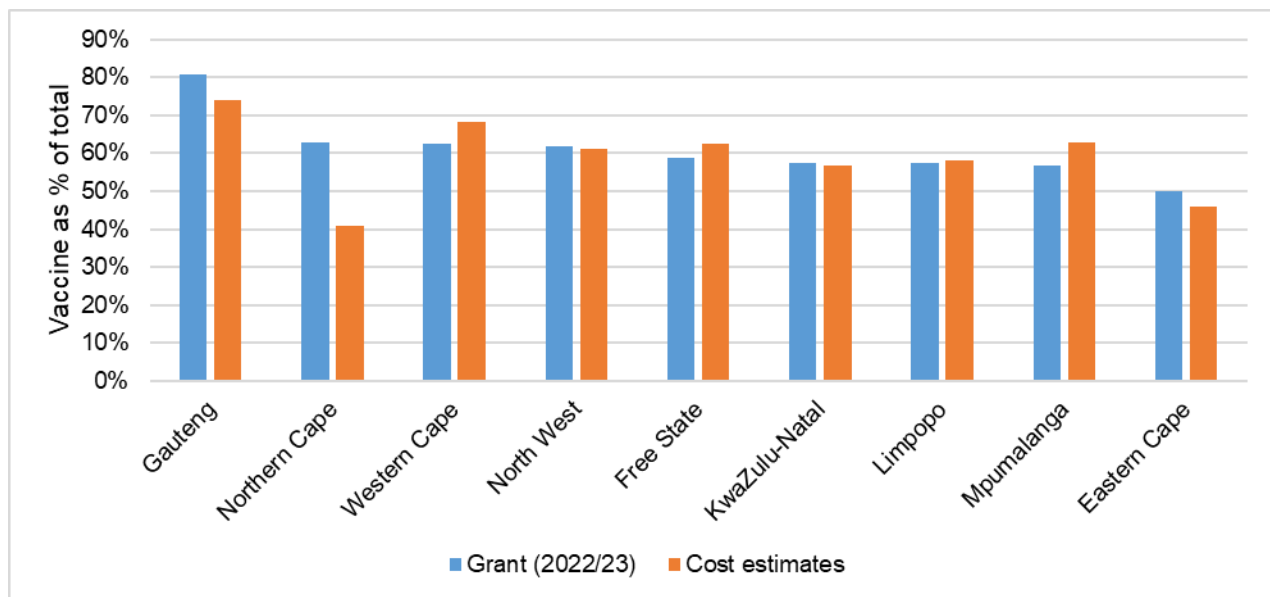


The cost estimates and the total grant are closely aligned in most of the provinces, although there are notable differences in Eastern Cape, Gauteng and Northern Cape.

**Figure 7** below compares an estimate of the vaccine costs as a proportion of the HPV grant allocation to the same proportion for the costing estimates.

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**Figure 7 Vaccine costs as a percent of the grant compared to cost estimates**



The provinces are ordered from highest to lowest percent of grant that should be spent on the vaccine. This is calculated by multiplying 80 per cent of the grade 5 girls by the cost of the vaccine and dividing this by the grant total for the province. The biggest variance between these estimates and the costing estimates is in the Northern Cape. This may be caused by travel costs carrying a lower weight in the allocation criteria than they should.

Besides the differences discussed above, the costing and the grant allocations are closely aligned, which suggests the costing methodology is sound and can be used to generate credible cost estimates for the purpose of informing policy and programming decisions.

### Potential cost savings

In the context of health conditional grants of R56 billion and a provincial equitable share of R560 billion, of which the health component is 27%, a R214 million conditional grant (R 0.214 billion) does not offer any significant cost savings.

Furthermore, in the context of the following statistics ...

*Current estimates indicate that every year 10 702 women are diagnosed with cervical cancer and 5 870 die from the disease. Cervical cancer ranks as the second most frequent cancer among women in South Africa and the most frequent cancer among women between 15 and 44 years of age (South African HPV Information Centre, 2021).*

*Cervical cancer is the 2nd most common cancer among South African women, but the cancer women die of most in our country. It can be successfully treated if detected in the early stages (CANSA<sup>1</sup>).*

.. effort should be focused on ensuring the effectiveness and sustainability of this campaign. The HPV programme on its own will not result in the eradication of cervical cancer (screening later in life is also important), but if effectively implemented will reduce these numbers to very low levels. The cost savings to the health sector as a result are likely to be a few multiples of the cost of the HPV programme. The economic and social value of the years of women's lives lost due to the cancer that can be prevented through this programme are likely to many multiples more.

Most of the costs of the programme are vaccines and salaries. The cost per vaccine is determined by the market and the target level of 80% is accepted as the level necessary to prevent community spread, therefore realistically no cost savings in the cost of the vaccine should be sought. To understand how different programme designs may affect costs, the following changes were modelled to assess their impact on costs:

<sup>1</sup> <https://cansa.org.za/cervical-cancer/>

## HUMAN PAPILOMAVIRUS (HPV)

Changes	Cost savings
Removing the professional nurse from the team	R30.15 million
Reducing the number of enrolled nurses by 1	R14.4 million
Removing the data capturers or health promoter from the team	R8.8 million
Increasing the time per day that HPV teams can visit schools from 6 hours to 7	R10.9 million
Changing the time spent at each school by 30 minutes	Costs change R19 million for each 30-minute decrease (or increase)

The cost of consumables used per school is a simple high-level estimate. It's not based on the items that are used by the HPV team and therefore it may be higher, or lower than it needs to be. But assuming it can be reduced to R125 per school this would save about R4million.

In the context of the number of women that get and die from cervical cancer, these amounts are all small fry.

## Discussions and Recommendations

### Look to improve the effectiveness of the programme, not cost savings

Every change discussed above that could bring about cost saving creates risks of events or health outcomes that will cost a few times more to address in the long run:

- Reducing the consumables used per school creates potential health risks through lack of cleanliness and hygiene which could lead to several illnesses that would cost a lot more than R4 million to address.
- Operating through teams that are too small is likely to create gaps in implementation such as promotion and demand creation activities not being as effective, girls being missed during visits and the direct cost of addressing this (i.e. staff spending time and incurring travel costs to re visit schools) is likely exceed cost savings.
- Too few medical staff on the team could lead to a range of problems such as not dealing with adverse events effectively (although these are rare); over worked medical staff being stressed and not dealing with young girls in an appropriate manner which could reduce participation in the campaign and lower trust levels and reluctance to access health services which would create an untold range of problems.

If there is a functional data capturing system in place that the team can access from a tablet and use real time while they are administering vaccines, consideration may be given to removing the data capturer from the team – however only if the risks mentioned above can be mitigated. But it is probably not worth it.

Rather, the focus should be on:

- a) finding ways to integrate and embed this programme into provincial education and health programmes
- b) using legal instruments – such as regulations and norms and standards – that place an obligation on provinces to provide the vaccine to all girls attending public schools before their eleventh birthday.

### Arguments for shifting it to the provincial equitable share

Although there are inconsistencies in the performance indicators as shown above, coverage levels are at about 80% which is sufficient to achieve herd immunity. Therefore, the programme appears to be successful. Given this, the cost of increasing the uptake of the vaccine beyond current levels most likely outweigh the benefits and these resources could probably be better used in other areas of the programme for activities such as training the health.



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The success of the programme also means that the funding for the programme should be transferred to the provincial equitable share, which will also enable improved integration into the ISHP. This has been a long-term intention of the grant from when it was first introduced.

Several benefits could accrue from incorporating the HPV grant into the provincial equitable share.

Firstly, provinces would be able to use the funds to appoint permanent staff to work on the programme full time. The costing shows that the workload created by the grant warrants employing between 3 and 14 full time teams, depending on the province. Appointing staff on a permanent basis to an “HPV component” on the provincial health departments establishment would allow the sector to re-design the programme. The programme could be continually implemented throughout the year and planned around distinct phases:

- Social mobilisation could happen throughout the year, which could lead to improved participation – including creating awareness, instructing schools to distribute consent forms to parents. Consent forms are valid for the entire year.
- The HPV teams visiting schools for first dose starting mid-February until May/June.
- June and July can be spent dealing with administrative backlogs such as reporting, planning for the second round of vaccinations and following up at schools and/or with individual girls that missed their first dose.
- From August to November the HPV teams visit schools to administer the second dose.
- The end of November and December can be used to consolidate data, prepare reports, evaluate and reflect and use that information to plan for the next year.

There must be a gap of 6 months between the two doses, which is possible if the above schedule is followed (February to August for the schools that are visited first, and May to November for the schools that are visited last).

As the programme would be institutionalised there will no longer be two annual events each of which need to be planned for separately and for each of which consumable materials, vehicles and temporary staff need to be procured or hired. Provinces will be able to:

- Procure vehicles that the HPV teams can use on a permanent basis and/or provinces will have more time to plan the procurement of transport for the HPV team. This should lead to vehicles being available to the HPV teams whenever they need them, which is currently not the case in all provinces due to fleet management and procurement issues.
- Procure hardware that can be used for data collection and reporting. This will enable staff to become familiar with the system and collect more reliable and useful data. If used correctly, the data can improve efficiencies in programme implementation and generate intelligence that support short term (in-year) responses and annual planning.

Provinces should be able to cut back on training as they will only need to train new staff when they are appointed and train existing staff on changes to the programme (which has only happened once since programme inception). This will bring about small cost savings.

As the HPV teams will be active the whole year, they will have time and flexibility to respond to issues that emerge that they currently do not have due to time pressures. For instance, a few provinces report on the lack of support from educators at schools to promote the campaign. Institutionalising the programme would provide the HPV team members with flexibility to revisit or spend more time with these schools to address this issue.

As the resources used by the HPV teams, especially the human resources, will be committed to the programme they will not be re-allocated in the event of short-term events, which has happened during Covid to the detriment of the HPV campaign. The converse of this also applies as in some provinces the HPV campaigns put short term and disruptive pressure on the health systems. If this was spread over the whole year it would not be noticed.

Lastly, the institutionalisation of the HPV programme will be a mechanism that the ISHP programme could potentially use to implement other school-based campaigns more effectively than has been done in the past. In 2021/22, the sector tried to add a deworming and tetanus campaign to the HPV campaign, but this failed as provinces were not able to procure the medicines for the other campaigns in time. If the HPV programme were institutionalised, provinces would have had more time to plan and combine these campaigns.

## **The Department of Basic Education should update the Schools Atlas**

The Schools Atlas (2013) which was published by the Department of Basic Education with support from UNICEF was a valuable resource for this analysis and was the source of data used to estimate distances between school.

The data contained in that atlas – especially the district sizes and number of schools per district – should be more readily available and accessible than it is – i.e. published in excel not in PDF files).

### **Thought – continue with 2 doses**

Recent research suggests that 1 dose of the vaccine is just as effective as the 2-dose regimen. This will allow the department to reduce the number of visits to schools during the year which would impact travel costs and cost of employment and/or free up human resources to work on other programmes.

Reducing the number of doses per girl would lead to direct savings on vaccine costs or the savings could be used to expand the programme to boys of the same age group.

However, an advantage of visiting the schools twice, to administer two doses, is that girls that missed the dose on the first visit can receive their first dose during the second visit. Reducing the programme to one dose would mean this second chance to get to the “missed” girls is lost.

### **Thought – keep it as an HPV programme implemented through schools**

One of the expenditure reviews recommended that the vaccine be provided off-site through the state vaccination programme for children. Although this would lead to cutting out certain expenditures, the resources needed to achieve the current levels of coverage of the HPV vaccine for 9-year-old girls would most likely require additional resources at clinics rolling out the state vaccination programme, which could make this approach more expensive.

The vaccine programme for children run up to the age of 2 years, with a follow up optional vaccine given at 5 years of age. Most parents only vaccinate up to the point where it is required for school attendance.

Therefore, an optional vaccine at 9 – 12 years of age, where girls and guardians must use their transport and productive time to get the vaccine is unlikely to achieve the same levels of coverage as the current programme is achieving.

### **Thought – do the consent forms do their job?**

None of the studies quantify the number of girls who do not return consent forms and are therefore excluded, by choice or unintentionally. However, the coverage reported for the grants suggest this is not a material issue. If it were, greater attention should be given to the content of the consent forms, communication with guardians around the HPV programme and follow ups with girls and guardians. These are activities that schools would need to lead and do not require additional resources.

### **The link to the objective segment**

The 202/23 conditional grant framework for the District Health Programmes Grant: District Health Component has the following condition:

*The above allocations must be linked by an objective segment on BAS*

The allocations referred to are for HPV, Malaria, Covid-19 and Community Outreach Services as these are the components of the grant. The wording as it appears here is vague, but the intention is that provinces add labels to the Objective Segment in BAS for each programme and report expenditures on these programmes against their respective objectives. In due course the wording should be tightened up and made more explicit.

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In principle this is a good idea as it should facilitate tracking expenditures against these programmes, of all types of expenditures. At the time of writing the condition had not yet come into force but the national department has discussed the intention of this with provinces.

As resources are shared across multiple implementation programmes there are some expenditures that will not be recorded against the objective for each component – e.g. the salary of individual nurses can be recorded against one objective only, even if they work across multiple objectives. But expenditures such as consumables, travel costs, vaccines, training, consultants and contractors (e.g. nurses hired on short term contracts for the specific purpose of working on the HPV programme) can be recorded against this objective accurately and this will help in monitoring expenditures and the data can enrich expenditures analyses.

## **References**

South Africa Human Papillomavirus and Related Cancers. Fact Sheet 2021. ICO/IARC Information Centre on HPV and Cancer.