VACCINATION STATUS OF CHILDREN WITH IPD CAUSED BY PCV13 AND PCV15 VACCINE SEROTYPES, 2011-2024

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BACKGROUND

Infant PCV vaccination has been recommended in Germany since 2006. PCV13 vaccination started in December 2009, and PCV15 was added in 2022. Here, we present data on the vaccination status of children with IPD caused by PCV13 and PCV15 serotypes from 2011 to 2024.

METHODS

IPD in children in Germany has been monitored since 1997. Isolates were serotyped using the Neufeld Quellung reaction. Vaccination status was ascertained by telephone enquiries. IPD surveillance in Germany was, in part, sponsored by Pfizer and Merck.

RESULTS

From season 2011/12 to 2020/21, in children <18 years of age, the prevalence of IPD cases associated with PCV13 serotypes reduced from 45% to 13% but rose to 35% in 2023/24, while PCV15non13 serotypes varied between 2.8% and 9.1% (**Fig. 1**).

From July 2011 to June 2024, 760 cases of IPD with PCV13 serotypes were reported to the GRLS (**Fig. 2**). Vaccination status could be ascertained for 69.8% of children <2 years, 61.7% of 2-4 year-olds and 44.7% in the age group 5-17 years.

Over the 13 seasons, serotypes 3, 19A and 19F made up for 81.2% (207 of 255) of the PCV13 cases in children <2 years, in 2023/24 this was 92%.

Among children <2 years, case numbers of unvaccinated children reduced, while cases of incompletely vaccinated children remained stable and of children vaccinated according to age slightly increased (**Fig. 3**). Serotype 3 cases expanded in all three vaccination categories, whereas 19A and 19F increased only in unvaccinated children and decreased (19A) or remained stable (19F) in the other categories. Cases with other serotypes declined overall (**Figs. 4-6**).

Of 21 serotype 3 cases in children <2 years that were vaccinated according to age with PCV13, 12 had completed a 2+1, and 3 a 3+1 schedule. Six had obtained only primary doses, while one child (18 months) had received a completed PCV15 2+1 schedule (**Fig. 7**). Of the 22 children with serotype 3 IPD, that were incompletely vaccinated, most (19) had obtained only primary doses, and no booster. One child (16 months) had received a PCV13 and a PCV15 primary dose, but no booster.

IPD associated with serotypes 22F or 33F in children vaccinated with PCV15 were not observed.

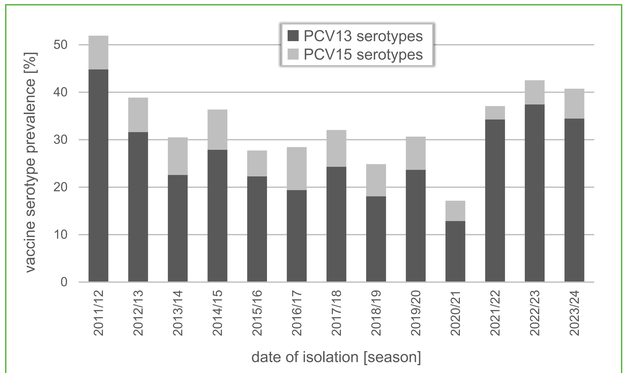

Figure 1: IPD in children <18 years of age in Germany, with PCV13 (dark grey) and PCV15 (light gray) serotypes

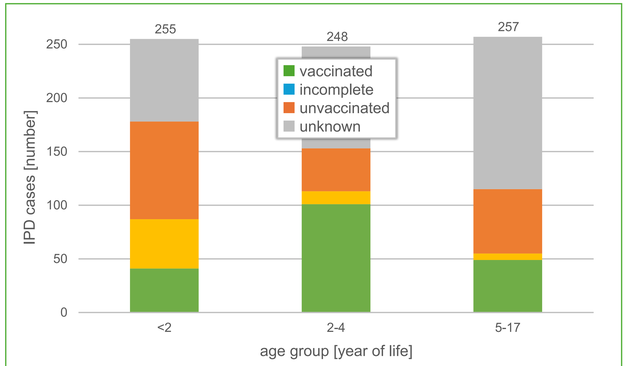

Figure 2: IPD in children in Germany, with PCV13 serotypes, sorted by age group and vaccination status

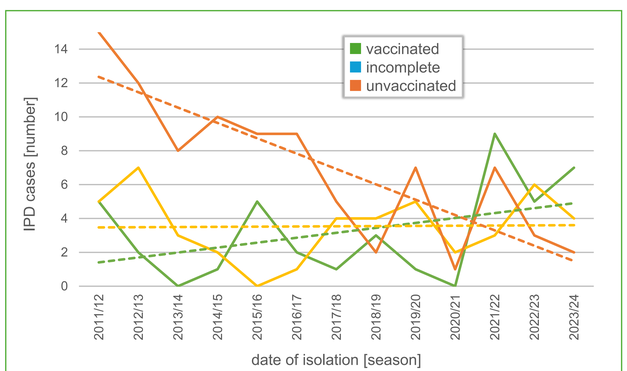

Figure 3: IPD in children <2 years of age in Germany, according to vaccination status, 2011/12 to 2023/24

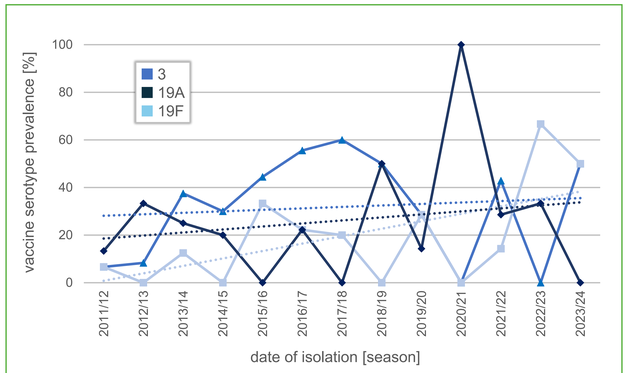

Figure 4: IPD in unvaccinated children <2 years, 2011/12 to 2023/24, with serotype 3 (blue), 19A (dark blue) and 19F (light blue)

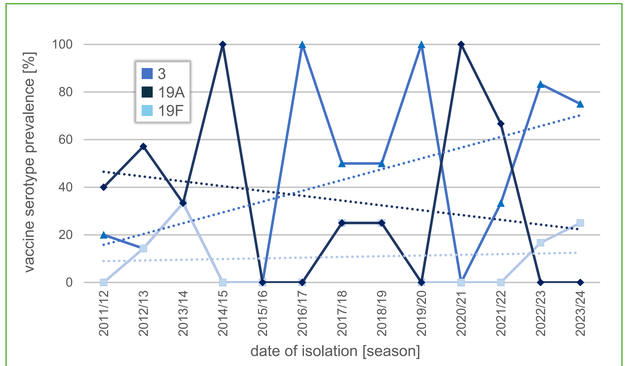

Figure 5: IPD in incompletely vaccinated children <2 years, 2011/12 to 2023/24, with serotype 3 (blue), 19A (dark blue) and 19F (light blue)

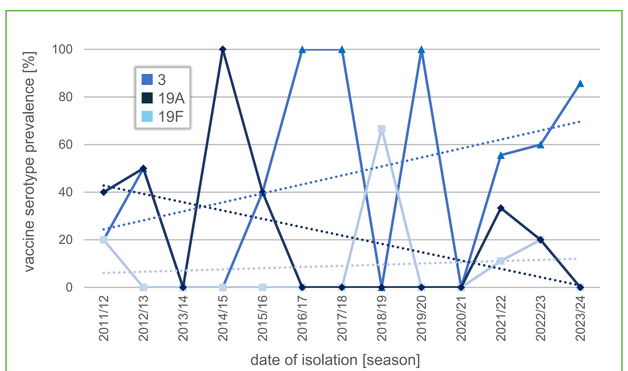

Figure 6: IPD in children <2 years, vaccinated according to age, 2011/12 to 2023/24, with serotype 3 (blue), 19A (dark blue) and 19F (light blue)

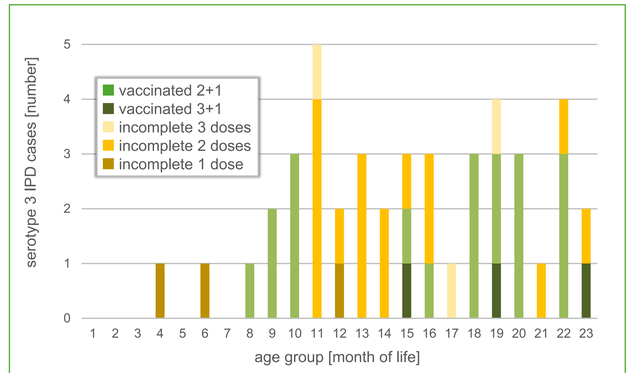

Figure 7: serotype 3 IPD in children <2 years, by age in months, with vaccinated according to age (green), incompletely vaccinated (yellow)

CONCLUSIONS

Despite a childhood vaccination recommendation for PCV13 since 2009, and PCV15 since 2022, vaccine serotypes are still prevalent in IPD in children.

A large fraction of vaccine type IPD occurs in unvaccinated or incompletely vaccinated children.

Over 80% of the PCV13 vaccine serotype cases in children <2y are caused by serotypes 3, 19A and 19F.

Serotype 3 prevalence increased in unvaccinated and in incompletely vaccinated children, as well as in children that are vaccinated according to age.

Children <2y vaccinated according to age with serotype 3 IPD, were vaccinated with 3+1 (PCV13) and 2+1 (PCV13/PCV15) schedules.

Incompletely vaccinated children <2y with serotype 3 IPD mostly lacked a booster dose.

As the recommendation for PCV15 vaccination was only issued in 2022, it is probably too early to observe an effect on 22F and 33F, as well as on serotype 3 cases.