CASE STUDY:

Measles Mumps & Rubella vaccination

Health Equity Audit

October 2007

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Public Health - Lambeth PCT
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### Executive summary page: Lambeth PCT – MMR vaccination – Equity Audit Profile (stage 1 to 5) of HEA

#### Aims and Objectives

**Aim:**
To improve the MMR vaccination coverage in the borough

**Objectives:**
- Assess the effectiveness of tailored support to practices with lowest reported vaccination coverage
- Identify profile of those children who were not vaccinated and assess how much inequities contributed to low vaccination coverage
- Make recommendations for promoting equitable improvement of MMR 1 coverage

#### Contact

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#### HEA cycle completed & time period

<table>
<thead>
<tr>
<th>Stage 1 to 2: Agreeing partners, frameworks and profiling</th>
<th>June-Sept 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 3: Identify strategic changes (literature review) &amp; finalise report</td>
<td>Sept-Nov. 2007</td>
</tr>
<tr>
<td>Stage 3: Dissemination of findings, feedback from service providers &amp; primary care and propose strategic changes</td>
<td>Jan-Mar. 2007</td>
</tr>
<tr>
<td>Stage 4: Agreeing actions</td>
<td>June 2007</td>
</tr>
<tr>
<td>Stage 5: Implementing actions</td>
<td>2007/08</td>
</tr>
<tr>
<td>Stage 6: Re-audit</td>
<td>Planned end of 2008 (once transfer into RIO)</td>
</tr>
</tbody>
</table>

#### Summary of audit and its impact

**Achievements:**
- Stage 1: stakeholder analysis done & interests for an equity profile identified
- Stage 2: equity profile:
  - Equity standards for vaccination identified
  - Disparities in coverage identified
- Stage 3: Effective local actions to tackle inequities were identified by:
  - Feeding back to children immunisation steering group & some service providers
  - Reviewing the local and published evidence on inequity factors in take up of vaccination and effective interventions to address the inequities
- Stage 4: Local targets were agreed with partners through the immunization group
  - The equity analysis highlighted the contribution of tailored support to improve service effectiveness and it was decided to extend this approach to all practices
  - A work-plan was discussed by the children immunization steering group and the need to complete current strategy with a communication element highlighted

**Findings:**
- The support provided by the PCT was effective in raising the MMR1 coverage, by 23% in supported practices compared to a decrease of 2.26%
### Executive Summary Page: Lambeth PCT – MMR Vaccination – Equity Audit Profile (Stage 1 to 5) of HEA

<table>
<thead>
<tr>
<th><strong>in non supported practices</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Targeted practices had lower uptake than the rest of the practices. The children registered with these practices were living in least deprived wards than children from non supported practices</td>
</tr>
<tr>
<td>• While prior to intervention vaccination uptake was increasing with ward deprivation level, there was no more effect of deprivation on MMR uptake after intervention</td>
</tr>
<tr>
<td>• After intervention children from Asian, black African and other black background were more likely to be vaccinated than white British</td>
</tr>
</tbody>
</table>

**Constraints:**

- No ethnicity recording prior to intervention
- Incomplete data: 6 in 100 children with no recorded registration with a GP in Lambeth; 3 in 10 with no record of MMR status

**Recommendations:**

- Support regular feedback from PIMS to ALL PRACTICES and encourage all practices in reconciling PIMS and GP database
- Improve ethnicity recording
- Support for systematic follow up of defaulters including enquiring at entry in primary school
- Better integrate vaccination services with other services e.g. social services, Sure Start and “healthy schools”
- Improve recording system for look after children & establish a baseline
- Develop a communication strategy for immunization including the need to tailor messages to parents’ perception, guidance on reliable source of information and how to speak about vaccine
- Repeat equity profile on data 2006-07

### Further Information

A detailed report of the equity profile was produced including the methodology of measurement of the disparities in service provision, a review of the factors contributing to inequity and suggested interventions to reduce inequity. The findings were presented to the childhood immunization sub health inequality sub-group of the PCT and reported in the board report, and during a visit from the national Health Protection Agency to the South East London Health Protection Unit.

Based on the findings, a proposal of stretch target on MMR1 coverage was submitted under LAA.

The immunization co-ordinator agreed to repeat the equity profile once the data have migrated into RIO

### Ratification History

By Children Immunization Steering group: 11 December 2006
By Public health management team: Oct 2007
2 Details of the Audit

2.2 Why HEA for MMR

In 2004, the Annual Public Health Report made recommendations to improve childhood immunization uptake in Lambeth through appointment of an immunization facilitator post, based on the children’s strategic review and undertaking a health equity audit. These recommendations have been applied. A project was started in October 2005 by the childhood immunization coordinator to improve MMR uptake. Fifteen practices were identified with less than 60% MMR uptake and with more than 10 children who were not immunized for the time period between April and September 2006. All 15 practices agreed to participate in the project as part of their PMS / GMS contractual monitoring.

Key actions included:
1) Regular and timely reconciliation of PIMS and GP databases
2) Work with individual practices to clean data and improve information flows
3) Encouraging staff to send invitations for children with no MMR
4) In-house training for clinical and non-clinical staff as required.
5) Problem solving with practice staff by the Immunization coordinator.

The equity audit of this service has started and the equity profile is reported in this document.

The scope of the equity audit was influenced by:
- The availability of data
- The need to understand parents’ decision process about MMR, and confirm the variability in behaviors and attitudes between different ethnic backgrounds.

2.2 Organisational arrangement:

Several departments were involved: Primary Care through the immunization coordinator, Health Protection Unit, and Public Health
Health Protection unit facilitated the stakeholder analysis, contributed to the analysis and provided data of measles cases. Share Services provided the data, as well as the expertise in the strengths and weaknesses of this source of data. Primary Care contributed to the design of the audit, the data analysis and the feedback back to service providers.

The Public Health Department developed the framework for the equity profile of immunization services, conducted the statistical analysis, and provided a review of evidence on factors of inequities in relation to vaccination and best practices to improve coverage and equity of immunization services.

2.3 Methodology
The following development steps were adopted:

• Stakeholder analysis
A consultation of the stakeholders about the equity audit identified the following interests:

Table 1: Stakeholders and MMR

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Interest</th>
<th>Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCT</td>
<td>MMR</td>
<td>Increase Immunization uptake</td>
</tr>
<tr>
<td>Public Health</td>
<td></td>
<td>Does the Service provide Equal opportunity?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>How fair are immunization services?</td>
</tr>
<tr>
<td>PIMS</td>
<td>Data quality and completeness</td>
<td>Identify reasons for differential data between PIMS and practice based data</td>
</tr>
<tr>
<td>HPU</td>
<td>Surveillance: Monitor trends over time, identify pockets of poor coverage, compare this with disease epidemiology</td>
<td>Professional knowledge and attitudes to diseases and vaccines. Parental attitudes to diseases and vaccines. Misconceptions of contra-indications.</td>
</tr>
</tbody>
</table>

• Presentation of audit protocol to Child Immunization Steering group
• Data extraction from PIMS database
• Descriptive and statistical analysis:
  Statistical analysis was done using STATA.

Immunization rate was calculated for the group of children who had their second birthday in the period Jan-June 2005 and Jan to June 2006. The total of children who had a reported MMR1 was divided by the total of children who had their second birthday during the study period.

Multivariate analysis using logistic regression test was conducted to control for known confounding variables which were associated with “being vaccinated with MMR1”: sex, practice, IMD level of SOA of residence, ethnicity for the second cohort. A different model was run before and after implementation of measures to improve vaccination coverage.

• Literature review
Statistical analysis provided a measurement of disparities but could not explain them. A literature review was conducted to identify current knowledge of factors contributing to disparities in uptake of MMR vaccine as well as best practices to address inequities in vaccination and improving coverage.

• Feed back to service providers through informal discussions
Informal discussion was held with health visitors who were identified as a crucial link both in data handling and advocacy to parents

• Proposal of plan of action
Based on national and local evidence, a plan of action was proposed and discussed by the Children immunisation steering group

2.4 Measurement of inequities
Outcome was defined as having had MMR1 by 2nd birthday
The immunization rate for each period was disaggregated by gender, ethnicity, practice and SOA of residence. For each studied characteristic the odds ratio was calculated taking the following domains as reference:
- white background
- girls
- less deprived SOA
- non supported practices

Differences in vaccination coverage between categories of the studied domains were significant if the t test p value was ≤0.05, and the 95% Confidence Interval (CI) did not include the value 1.

3. Achievements

- **Equity standard for vaccination proposed:**

  Any child independently of his/her demographic characteristics (gender, place of birth, ethnicity) and socio-economic characteristics of his/her family has the opportunity to be given MMR1 by his/her second birthday. None should be disadvantaged from receiving MMR1 if it can be avoided.

- **MMR1 vaccination coverage**

  The vaccination coverage was calculated before and after the implementation of PCT support to improve vaccination coverage targeted to 15 practices. It was calculated for the groups of children who had their second birthday in the period Jan-June 2005 and Jan to June 2006. The total number of children who had a reported MMR1 was divided by the total number of children who had their second birthday during the study period. This measurement was done for all children recorded with Lambeth practices, for the 15 practices that received support from PCT to improve their immunization coverage, and for the practices who did not receive specific support.
Table 2: vaccination coverage by state of the practices

<table>
<thead>
<tr>
<th>Practices</th>
<th>Before</th>
<th>After</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>62%</td>
<td>68%</td>
<td>+6%</td>
</tr>
<tr>
<td>15 targeted Practices</td>
<td>53%</td>
<td>76%</td>
<td>+23%</td>
</tr>
<tr>
<td>Other practices</td>
<td>68%</td>
<td>66%</td>
<td>-2%</td>
</tr>
</tbody>
</table>

The immunization rate for each period was disaggregated by gender, and ethnicity, and practice and SOA of residence. Change in the ethnic profile could not be identified because of the absence of ethnicity recording before intervention.

Table 3: vaccination coverage by gender

<table>
<thead>
<tr>
<th>Practices</th>
<th>Before</th>
<th>After</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>Boys less likely</td>
<td>No difference</td>
<td>Equitable</td>
</tr>
<tr>
<td>15 targeted Practices</td>
<td>Boys less likely</td>
<td>No difference</td>
<td>Equitable</td>
</tr>
<tr>
<td>Other practices</td>
<td>Boys less likely</td>
<td>No difference</td>
<td>Equitable</td>
</tr>
</tbody>
</table>

Table 4: vaccination coverage by level of deprivation of the children’s place of residence

<table>
<thead>
<tr>
<th>Practices</th>
<th>Before</th>
<th>After</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>Better outside of 20 better off wards</td>
<td>No difference</td>
<td>Equitable</td>
</tr>
<tr>
<td>15 targeted Practices</td>
<td>No difference</td>
<td>No difference</td>
<td>Equitable</td>
</tr>
<tr>
<td>Other practices</td>
<td>No difference</td>
<td>No difference</td>
<td>Equitable</td>
</tr>
</tbody>
</table>

- Inequities in MMR vaccination

The observed differences in vaccination coverage between gender, ethnicity and deprivation categories were compared to the “equity standard” mentioned above. If a difference persisted after multivariate analysis (adjusting for sex, practice and Index of Multiple Deprivation (IMD) level of the area of residence), it was assumed to be “unjustifiable and avoidable difference” and as such an inequity.
In the table below, what was identified as an “inequity” is in red and what was judged as “equitable” is in green.

Table 5: Observed inequalities and inequities after multivariate analysis

<table>
<thead>
<tr>
<th>Factor</th>
<th>Pre-Intervention</th>
<th>Post –intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support to practice</td>
<td>Supported practices less likely to vaccinate by 2\textsuperscript{nd} birthday than non supported practices: OR = 0.6 (95% CI: 0.5-0.7)</td>
<td>Supported practices more likely to administer MMR1 by 2\textsuperscript{nd} birthday than non supported ones: OR = 1.6 (CI:1.2-2.2)</td>
</tr>
<tr>
<td>Gender</td>
<td>Boys less likely to have had MMR1 by 2\textsuperscript{nd} birthday than girls</td>
<td>No gender difference</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Not available</td>
<td>Children from black and Asian background were more likely to have had MMR1 by 2\textsuperscript{nd} birthday than those from white background</td>
</tr>
<tr>
<td></td>
<td></td>
<td>There was no ethnic disparities in MMR1 coverage among children registered with supported practices</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Among children registered with non supported practices, children from Black &amp; Asian background were more likely to be vaccinated than those from white background</td>
</tr>
<tr>
<td>Deprivation</td>
<td>Children living in areas classified as least deprived were less likely to have received MMR1 by 2\textsuperscript{nd} birthday</td>
<td>No difference except for children living in the 4\textsuperscript{th} IMD quintile and registered with supported practices: they were more likely to have had MMR1 by their 2\textsuperscript{nd} birthday compared to children living in the first IMD quintile</td>
</tr>
</tbody>
</table>

4. What could have been done better?

The equity analysis could have benefited from the following changes:

- Compare with London wide coverage for the same periods to ensure that the observed changes were due to the intervention and not a broader trend
- Adopt more of a capacity building approach with the service providers
- Use the income domain of the IMD instead of the multiple Index value
• More extensive dissemination of the findings including to potential users of the service. This could be done using existing channels such as Sure Start, parenting coordinator from the council, early years service

5. What are the next steps?
• Repeat the equity profile on 1 year of data
• Advocate for indicators of equity including into performance of MMR coverage
• Addressing needs of other stakeholders especially around look after children
• Continue with regular clean up of the databases and train clerical staff about the data recording and the impact of it
• Add to the current approach to increase MMR coverage:
  - a communication strategy (e.g. may be worth to look at the experience of teenage pregnancy), addressing issue of vaccine safety and tools allowing the public to identify reliable information sources
  - active tracing of defaulters by identifying MMR status at time of registration with primary school
  - Based on health professional experience, develop a “good practice guidelines” for the delivery and follow up of MMR vaccination

6. Lessons learned
- Data reconciliation and cleaning is critical
- Other factors than access and information are likely to affect MMR uptake
- There is a need to understand more about communication on MMR and vaccine safety in a diversified cultural population
- MMR1 coverage estimate needs to take into consideration the use of individual vaccines