BACKGROUND

- Influenza and respiratory syncytial viruses (RSV) are common viral respiratory infections and can be severe in children, causing a high burden on healthcare services.
- To reduce nosocomial transmission, patients admitted to hospital with suspected influenza or RSV infection are presumptively isolated until microbiological laboratory confirmation.
- Patients with confirmed influenza or with ILI during active influenza season should be offered antiretroviral treatment within 48 hours of symptom onset.
- Centralised laboratory test reporting can be slow, delaying appropriate management.

AIMS

- To explore the impact of introducing a high performance point of care test (POCT) for influenza and respiratory syncytial virus (RSV) (Enigma® MiniLab™ RUA-B RSV) compared to standard care of using a laboratory-based respiratory viral panel (RVP) assay on an acute paediatric ward of a large London hospital during influenza season in terms of:
  - Length of stay
  - Reimbursement charges
  - Utilisation and total costs of laboratory tests and drugs
- To estimate the number of patients who are influenza-positive who are appropriately prescribed oseltamivir for influenza before and after introduction of the test.

RESULTS

- In the descriptive statistics, only the age at admission (p=0.013), the likelihood of having a complication (p=0.01), and the percentage of admissions in which oseltamivir was prescribed were statistically different between the periods (p<0.01).
- There was no significant difference between the periods for the total length of stay (period 1: mean 2.45 days, median 2.00 days; period 2: mean 2.31 days, median 1.90 days; p=0.22), nor length of stay in the acute paediatric ward (period 1: mean 2.08 days, median 1.65 days; period 2: mean 2.62 days, median 1.70 days; p=0.33). The unadjusted average reimbursement charges were not significantly different between periods.
- Reductions were observed in the reimbursement charge for patients with a negative influenza and RSV test; these differences disappeared when we controlled for top-up services charges (TABLE 1). Slight increase was seen in the cost of drugs for admissions for influenza and/or RSV positive patients.

TABLE 1: AVERAGE REIMBURSEMENT CHARGE AND DRUG COST SAVINGS BY TYPE OF PATIENT FOR PERIOD 2 COMPARED TO PERIOD 1

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Not controlling for top-up services*</th>
<th>Controlling for top-up services*</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Admissions with influenza +/- RSV</td>
<td>Admissions with influenza +/- RSV</td>
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<tr>
<td></td>
<td>Admissions with influenza +/- RSV</td>
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<tr>
<td></td>
<td>Reimbursement charging</td>
<td>Testing</td>
</tr>
<tr>
<td></td>
<td>(% of inpatient admissions)</td>
<td>(% of inpatient admissions)</td>
</tr>
<tr>
<td>Reimbursement for total admission</td>
<td>£650.90</td>
<td>£650.05</td>
</tr>
<tr>
<td></td>
<td>£648.05</td>
<td>£647.10</td>
</tr>
<tr>
<td>Reimbursement for stay on the acute paediatric ward</td>
<td>£648.05</td>
<td>£647.10</td>
</tr>
<tr>
<td></td>
<td>£648.05</td>
<td>£647.10</td>
</tr>
<tr>
<td>Cost of drugs</td>
<td>£149.00</td>
<td>£149.00</td>
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<td></td>
<td>£149.00</td>
<td>£149.00</td>
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</table>

Negative savings imply an additional cost in the second period with regards to the first period: Controlling for age, sex, having at least one relevant condition, having a complication, and requiring hospitalisation in the high dependency unit.

DISCUSSION

- During period 2, reimbursement charges decreased for patients who were negative for influenza and/or RSV. As no change in length of stay between periods was observed, this suggests changes in reimbursement may occur due to improved admission coding. The POCT provides additional information on microbiological results that might improve coding practices.
- Changes to coding and the distribution of HRG codes can affect the quantity of HRG codes that attract top-up services and thus additional reimbursement; including a shift in respiratory HRG codes which are ineligible for top-up services (borderline significant change in respiratory HRG codes observed between periods: 51% and 59%, p=0.06).
- In period 1 over 85% of patients with influenza did not receive oseltamivir. A POCT can significantly increase appropriate oseltamivir use in a paediatric hospital, perhaps as a confirmed infection at admission allows clinicians to start antibiotics on antivirals earlier.

METHODS

- Data were collected from patients with suspected viral respiratory tract infection on the acute paediatric ward of Guy’s and St Thomas NHS Foundation Trust.
- There were 274 eligible admissions tested during the 2013/14 influenza season when only the RVP was used (period 1), and 300 admissions tested in 2014/15 using both the Enigma® MiniLab™ and the RVP test in parallel (period 2).
- Outcomes estimated:
  - Tariff reimbursement charges (total inpatient admission and time spent on the acute ward)
  - Prescription requests from the pharmacy, cost, and oseltamivir and antibiotics prescribed.
  - Proportion of positive results for each virus detected by the RVP in both periods.
- Multivariate regression analyses were run using independent variables as controls to explore the impact of the period (2 versus 1) on each of the outcomes, controlling for potentially confounding patient characteristics.
- We took a healthcare provider perspective, and used national and local costs.

REFERENCES