

# The Cold Chain and Vaccine storage

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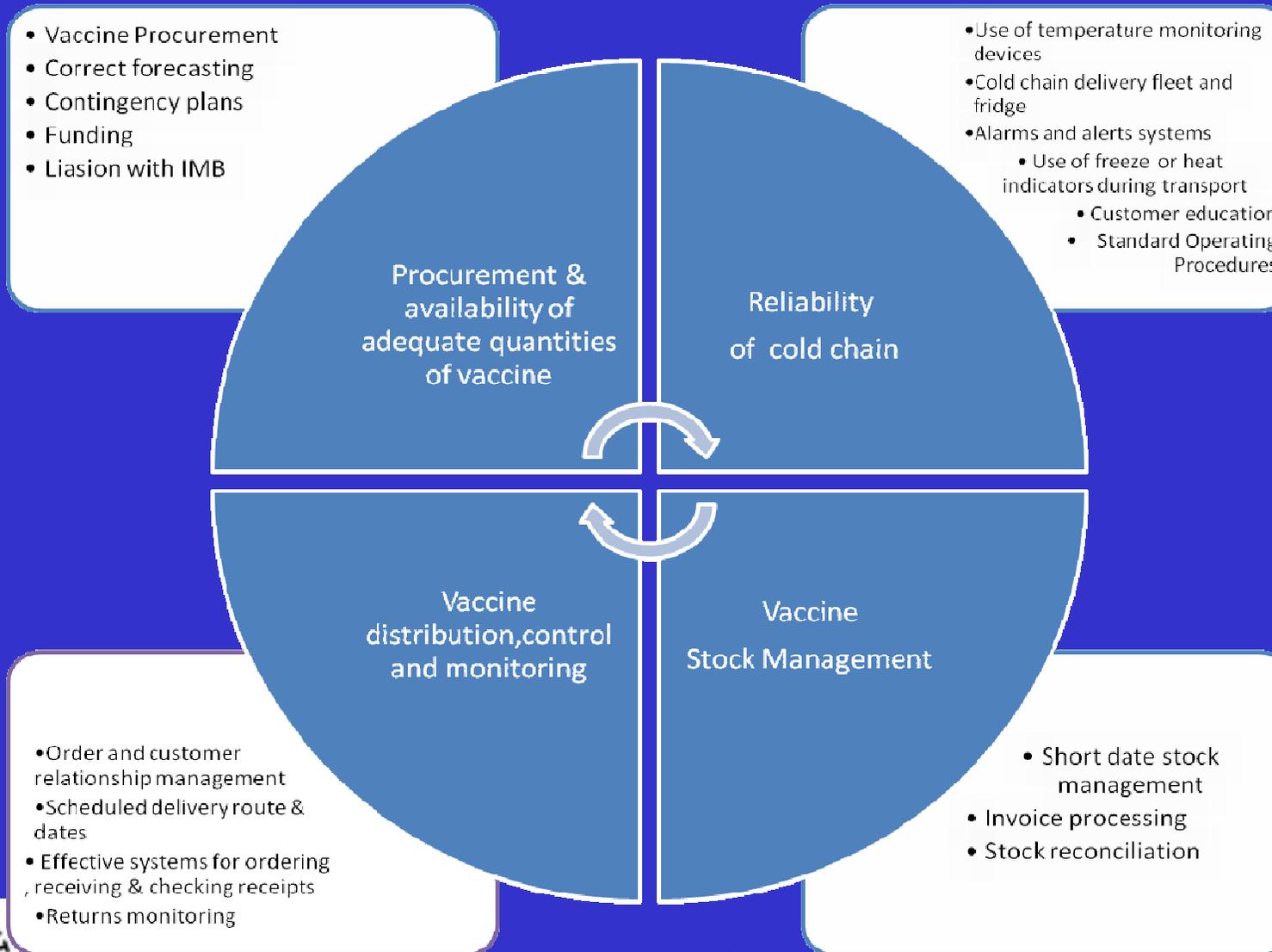
# Objectives

- To explain the cold chain and vaccine delivery service including use of vaccine returns service
- To understand the correct procedures for handling and storage of vaccines
- To understand the importance of monitoring the cold chain within your own practice
- To explain recommendations for breaks in cold chain



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# Factors affecting vaccine management performance



# Relevant sections

- Use of temperature monitoring devices
- Cold chain delivery fleet and fridge
- Alarms and alerts systems
- Use of freeze or heat indicators during transport
- Customer education
- Standard Operating Procedures

Reliability  
of cold chain



Vaccine  
distribution, control  
and monitoring

- Order and customer relationship management
- Scheduled delivery route & dates
- Effective systems for ordering, receiving & checking receipts
- Returns monitoring



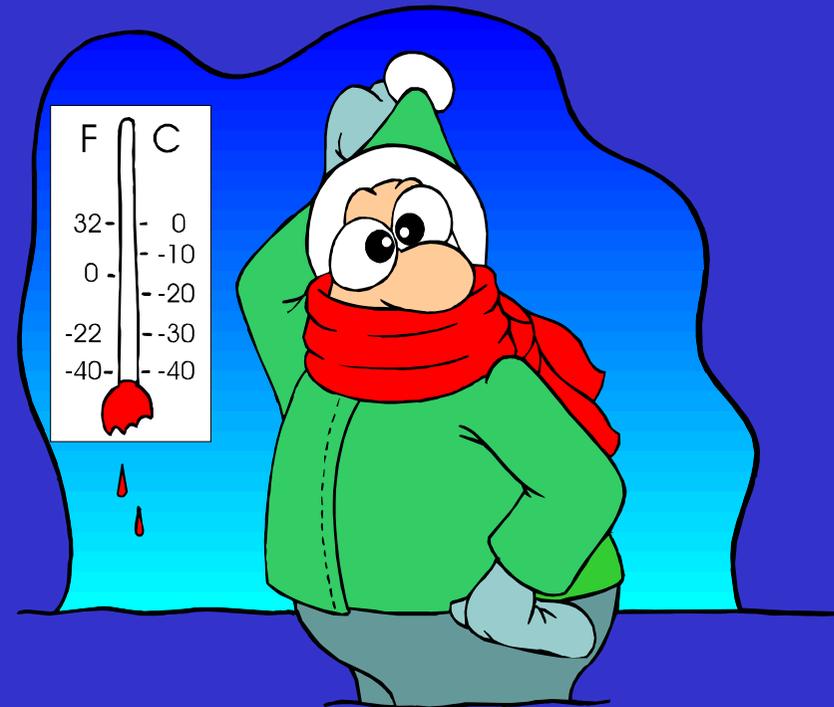
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# Why is the cold chain important?

- Vaccines must be stored within a specific temperature range between +2 and +8<sup>0</sup> C to ensure their potency and to comply with regulations (PA/EU)
- Every vaccine from time of manufacture up to point of delivery to surgery has a verified temperature record
- Assurance in product potency ensures maximum benefit from immunisation



# Reliability of Cold Chain

- Temperature records are available for every vaccine from point of manufacturing to delivery at GP surgery.
- Storage fridges and transport vehicles are all equipped with heat / cooling devices and alarms/alert systems which are monitored 24/7



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# National Cold Chain Delivery Service

- Commenced 1<sup>st</sup> January 2005, delivering to ~1650 sites annually has increased to 2,600 sites receiving 2.3 million vaccines in 2011
- United Drug Distributors in Tallaght with satellite sites in Limerick and Ballina



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# Delivery Vans

- Vans equipped with alarms and heating/cooling systems, backup fridges and navigation & location tracking systems.
- Each delivery has a temperature report tracked to it.
- Robust contingency plans in case of power failure or breakdowns.
- Standard operating procedures govern all processes.



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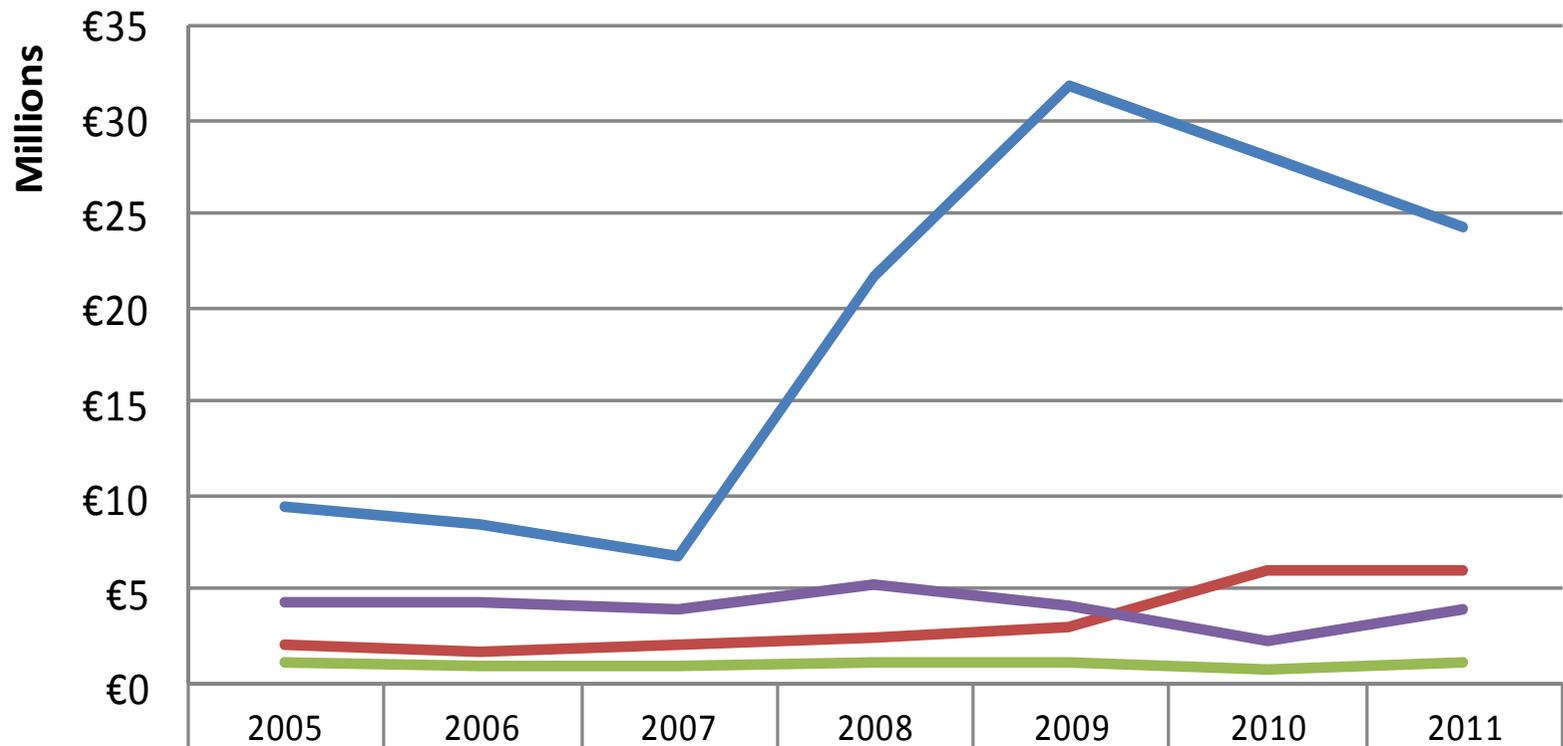
# Vaccine distribution, Control & Monitoring

Vaccine distribution is monitored to ensure it is consistent with target cohort requirements as significant deviations may indicate over or under stocking.



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# Cost of Vaccines Purchased



|                   | 2005       | 2006       | 2007       | 2008        | 2009        | 2010        | 2011        |
|-------------------|------------|------------|------------|-------------|-------------|-------------|-------------|
| Primary Childhood | €9,431,984 | €8,484,443 | €6,818,046 | €21,607,759 | €31,757,380 | €27,922,881 | €24,179,898 |
| Schools           | €2,212,655 | €1,813,192 | €2,213,546 | €2,520,387  | €3,133,792  | €6,001,067  | €6,039,511  |
| Others            | €1,233,952 | €1,055,661 | €1,069,055 | €1,180,174  | €1,190,262  | €855,082    | €1,179,949  |
| Flu and PPV       | €4,315,082 | €4,404,046 | €4,003,625 | €5,288,291  | €4,272,191  | €2,385,705  | €4,034,385  |

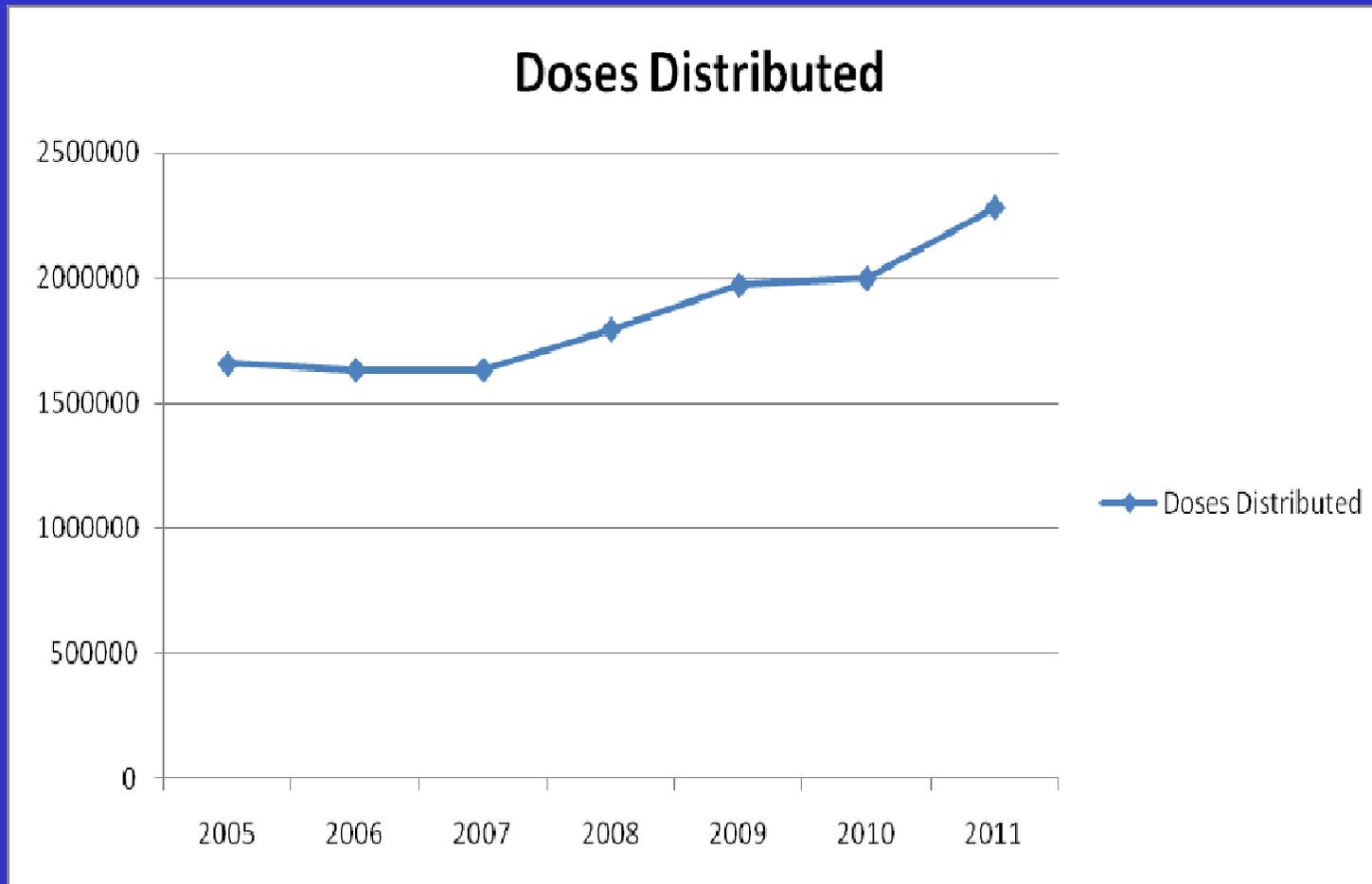


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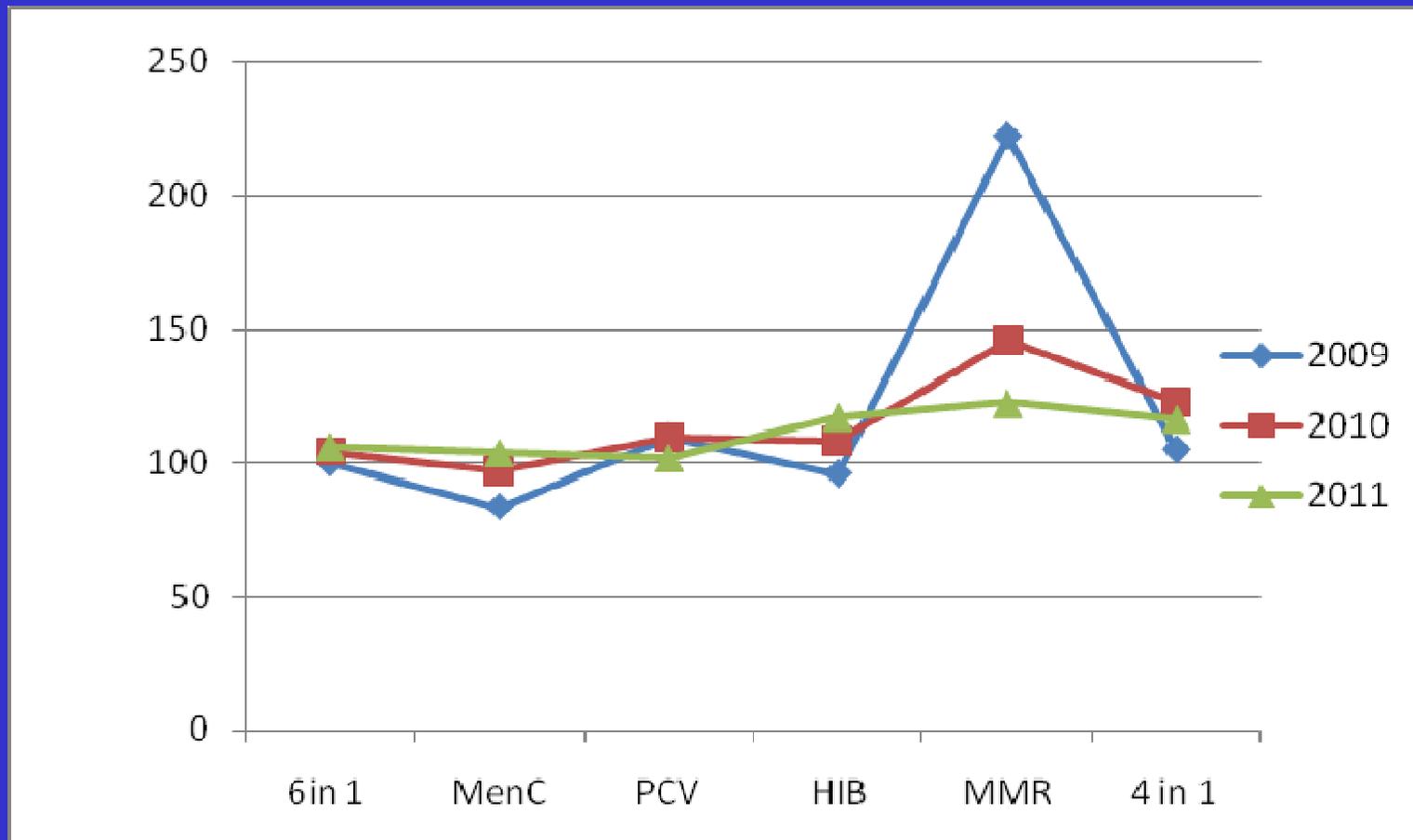
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# Number of Doses Distributed



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# Number of doses distributed as % of cohort requirements in 2009-2011



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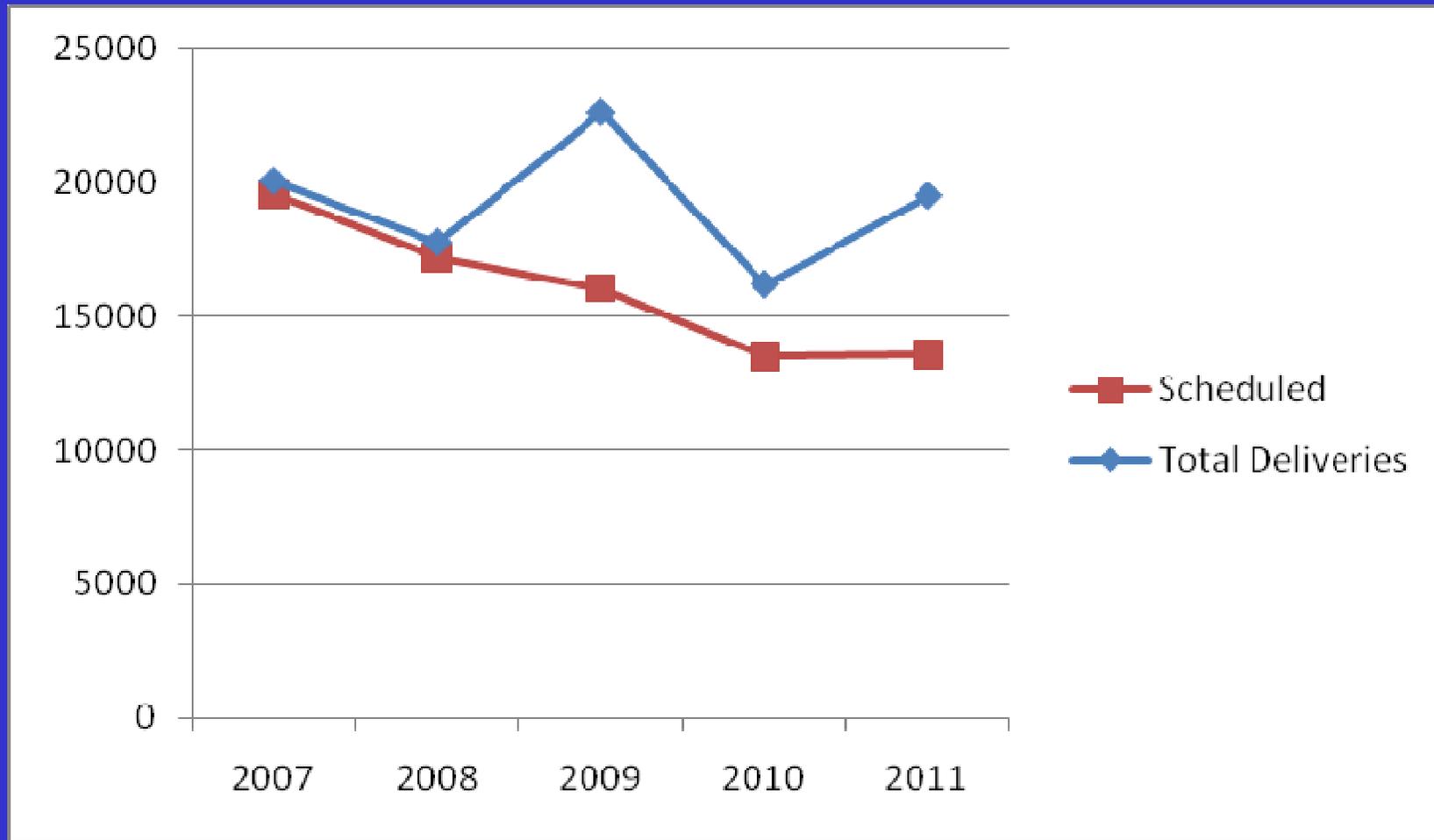
# Vaccine deliveries

- Each site is entitled to 12 monthly deliveries per year plus 2 extra deliveries during the “flu season”
- Unscheduled
- Emergency



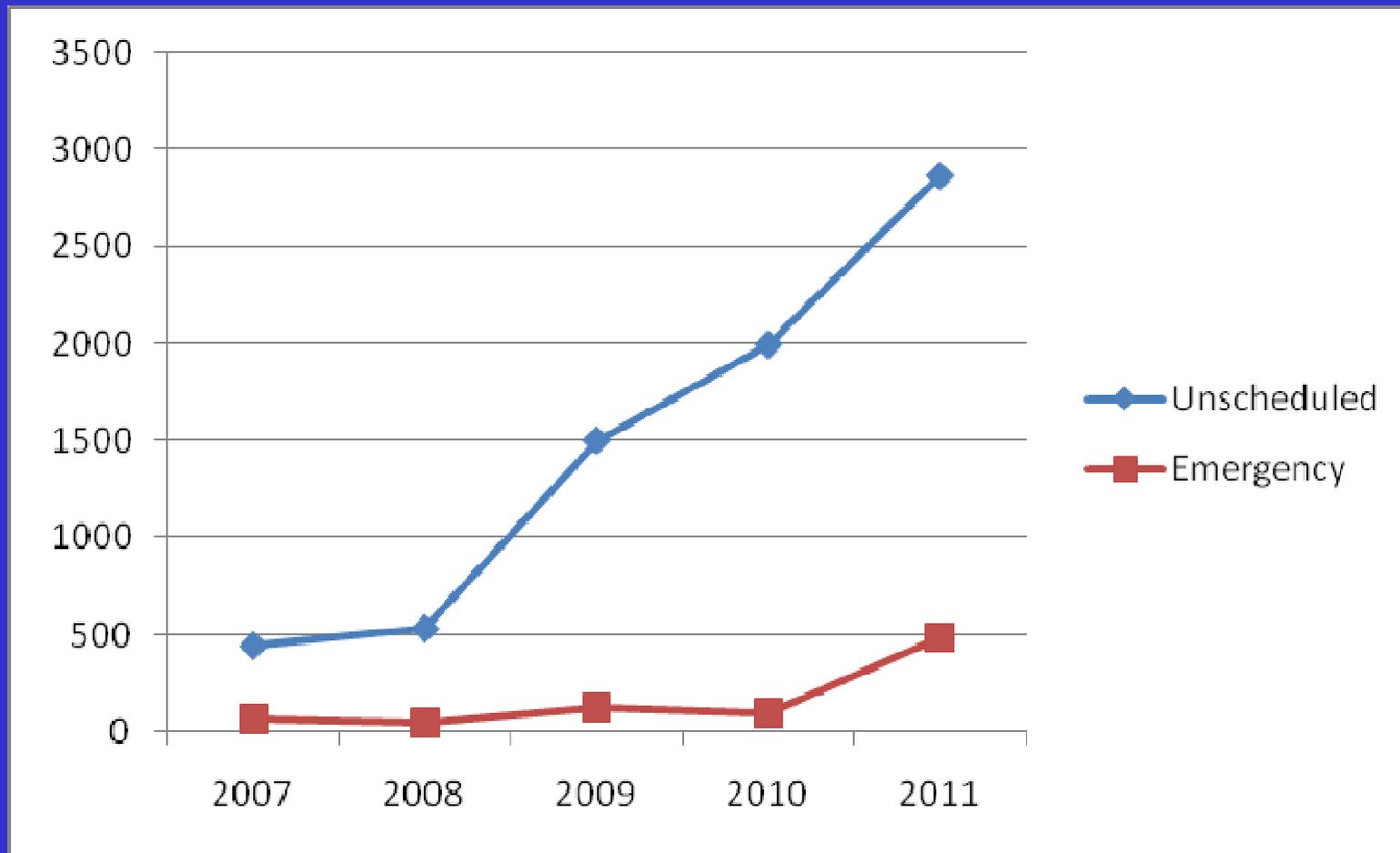
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# Number of Deliveries 2007-2011



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# Number of Unscheduled & Emergency



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# Vaccines supplied

|                            | Vaccines   |
|----------------------------|--|
| Primary Childhood vaccines | 6 in 1, Men C, PCV, MMR, Hib, 4 in 1   |
| Adult vaccines             | Td<br>Influenza, Pneumococcal polysaccharide vaccine                                     |
| HSE vaccines               | BCG, Tuberculin , 4 in 1, MMR, TdaP, HPV   |
| Restricted vaccines        | Hepatitis A, Hepatitis B, Hepatitis A +B<br>Td/IPV, TdaP/IPV and MenACW <sub>135</sub> Y |

Current list of available vaccines

- from United drug
- in newsletter
- on immunisation website

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# Who can order vaccines?

- GPs who hold an immunisation contract
- Community Health Doctors who run the school immunisation service, BCG clinics
- Hospitals who require vaccines
- Authorised Flu Sites (Retail Pharmacies and Nursing homes)
- Vaccines are delivered monthly directly to these sites.



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# How much vaccine should be ordered?

- The quantity of vaccine order can be determined by
  - Quantity used since last delivery
  - Storage volume within the refrigerator
  - Vaccines currently in the refrigerator
  - Seasonal variation e.g. influenza vaccine
  - Disease outbreaks



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# Some typical vaccine orders with Values

| Qty   | Vaccine          |
|-------|------------------|
| 10    | INFANRIX HEXA    |
| 10    | PREVENAR         |
| 10    | MEN C            |
| 10    | MMR              |
| 5     | HIB              |
| 5     | DITE BOOSTER     |
| Total | <u>€2,488.17</u> |

| Qty   | Vaccine          |
|-------|------------------|
| 30    | INFANRIX HEXA    |
| 30    | PREVENAR         |
| 30    | MEN C            |
| 10    | MMR              |
| 10    | HIB              |
| 10    | DITE BOOSTER     |
| Total | <u>€6,844.46</u> |

| Qty   | Vaccine           |
|-------|-------------------|
| 70    | INFANRIX HEXA     |
| 70    | PREVENAR          |
| 70    | MEN C             |
| 40    | MMR               |
| 25    | HIB               |
| 30    | DITE BOOSTER      |
| 20    | TETRAVAC          |
| Total | <u>€16,818.34</u> |



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# Recommended procedure for ordering and accepting vaccines

- Should have a named, trained and designated person and deputy
- Fax or e-mail order to UD before closing date
- Remove expired vaccines from fridge and prepare for return.
- Give vaccine returns to UD driver
- Check vaccine deliveries against the order for damage or discrepancies
- Place vaccines in the vaccine refrigerator immediately
- NEVER leave vaccine delivery at room temperature



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# Vaccine storage

- To comply with licence
  - Store within the temperature range of 2-8<sup>0</sup>C
  - Store in original packaging
- Store vaccines on shelves, not touching the sides of the fridge
- Record fridge temperature twice daily
- Use a switchless socket
- **Never unplug the fridge**
- **Never use out of date vaccines**



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# Recommended procedure following a break in the Cold Chain

- Usually occurs due to a problem with the vaccine fridge. E.g.
  - Electricity power cut
  - Switch turned off
  - Fridge door left open.
- ***If this happens***
  - Make sure that the refrigerator door is closed
  - Check the temperature and find out how long the refrigerator breakdown has been
  - Contact the Chief Pharmacist, National Immunisation Office for further advice. (087 9915452 or 01 8676108)



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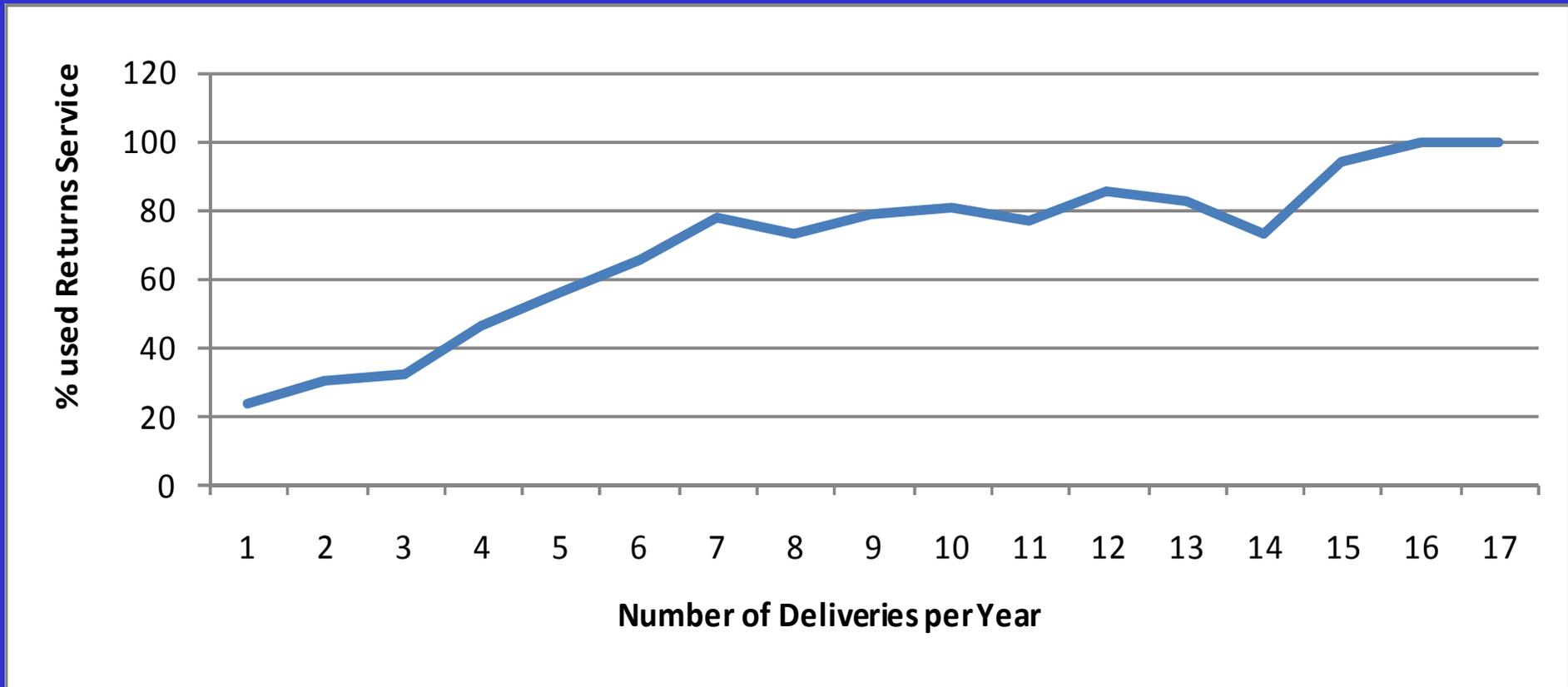
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# Recommended procedure following a break in the Cold Chain (2)

- Any vaccine not stored between 2<sup>0</sup>-8<sup>0</sup>C is no longer a licensed product
- Company data show that vaccines can be used if exposed to short deviations.
- Each temperature deviation must be judged on a case by case scenario.
- Each vaccine has specific criteria and will remain stable for different lengths of time.
- Vaccines which cannot be used must be returned to the National Cold Chain Delivery Service



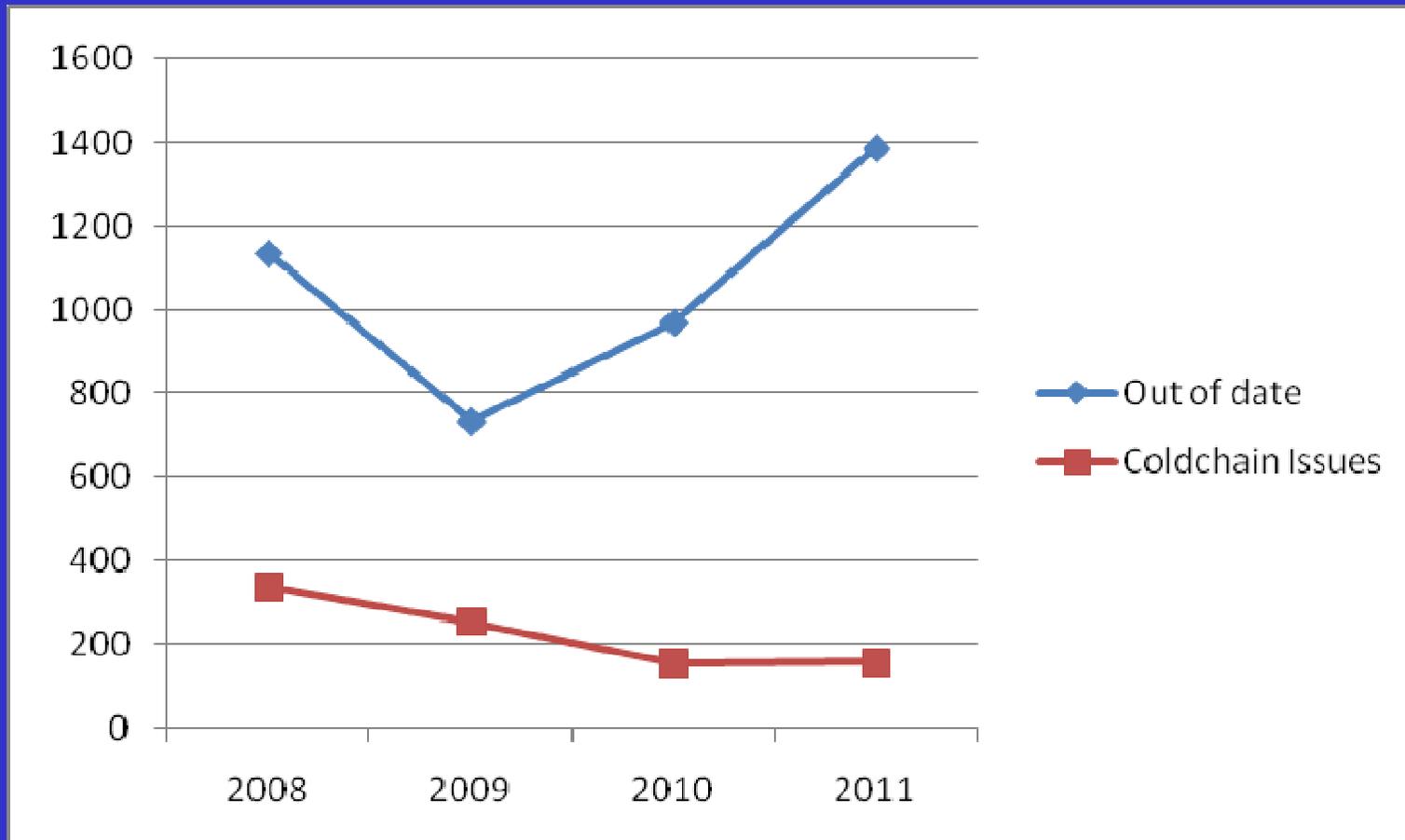
# Sites using the returns service by number of deliveries per year



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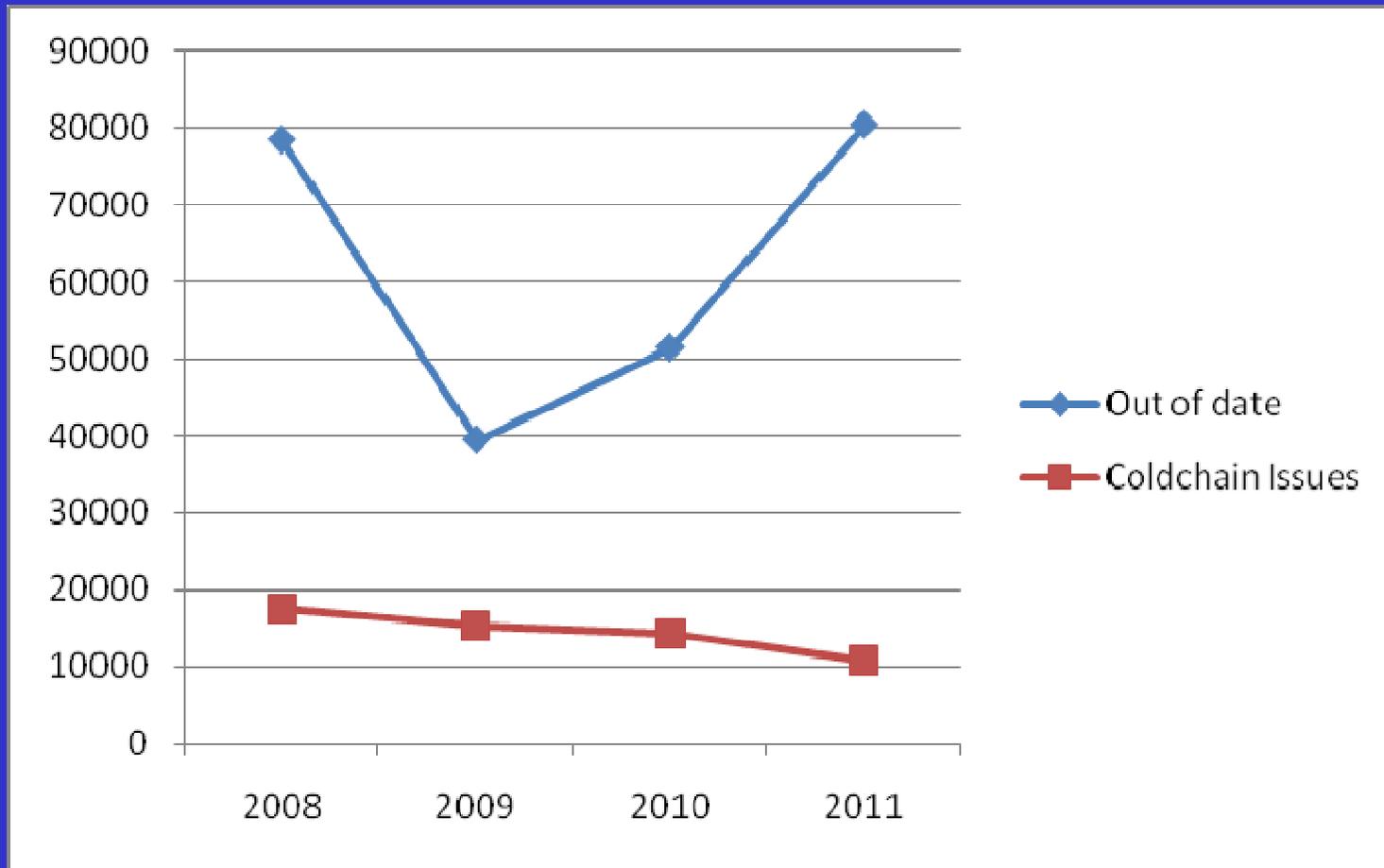


# Number of Sites using returns service 2008 -2011



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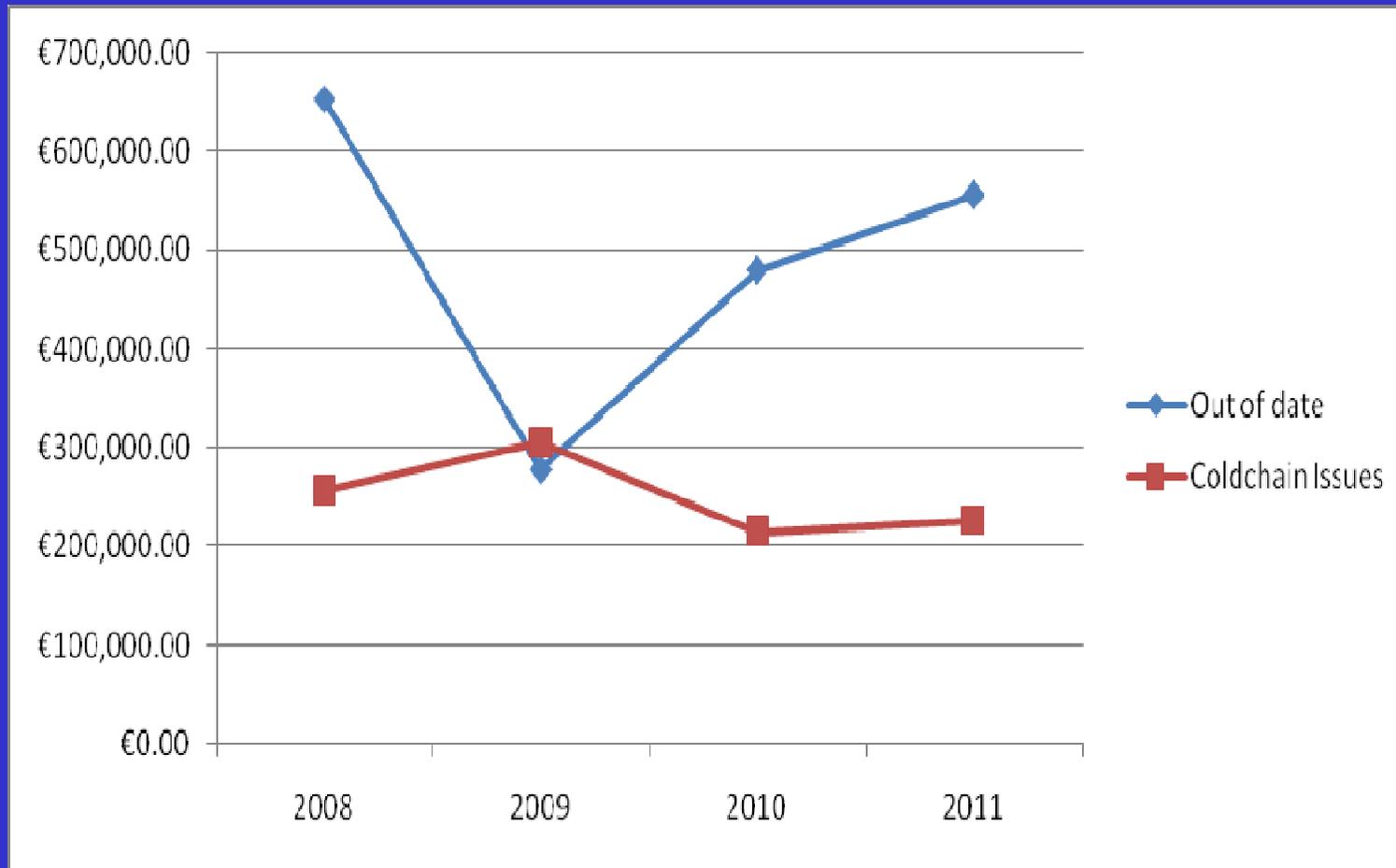
# Number of Doses Returned 2008 - 2011



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# Value of Returned Doses

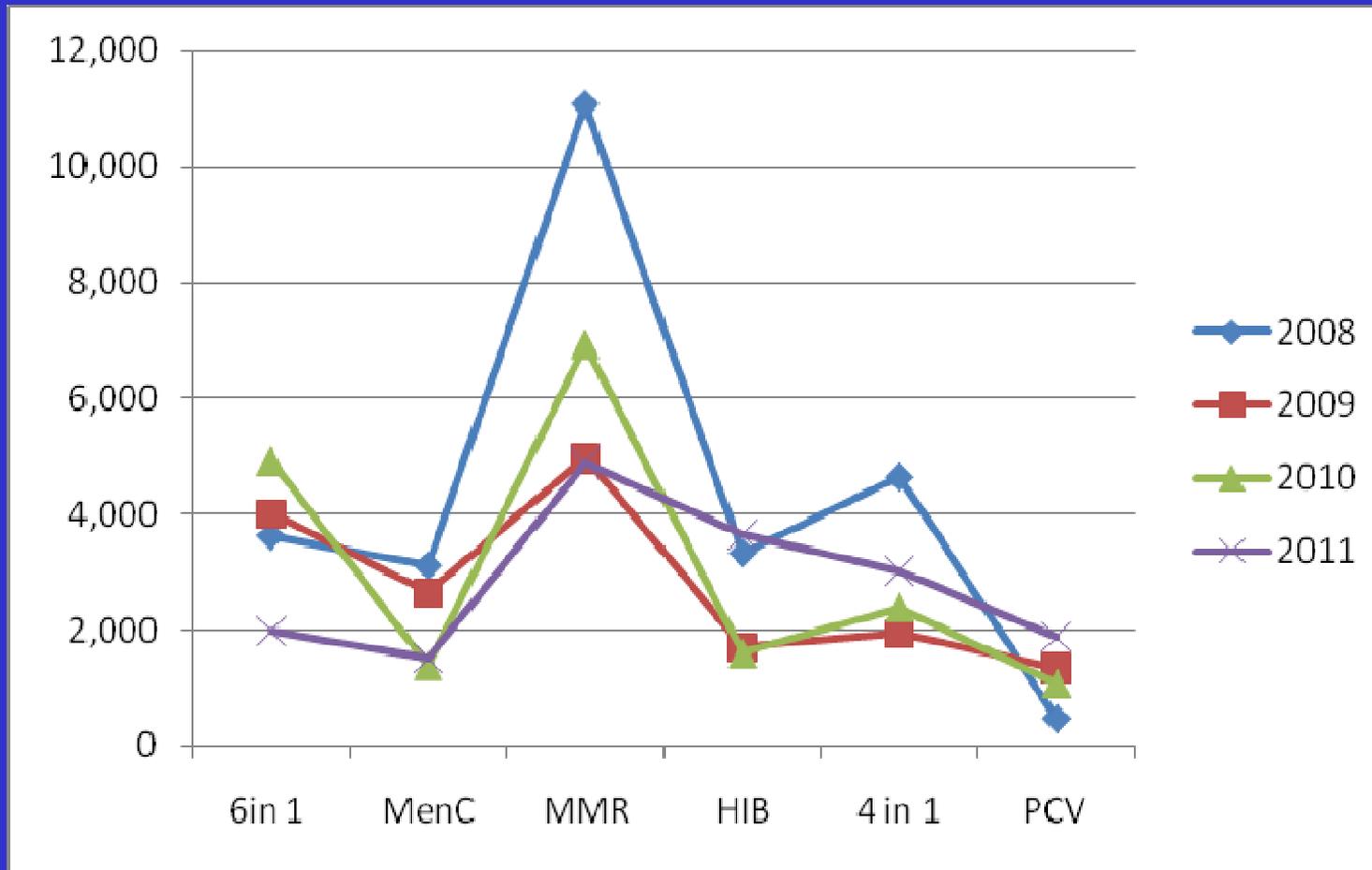


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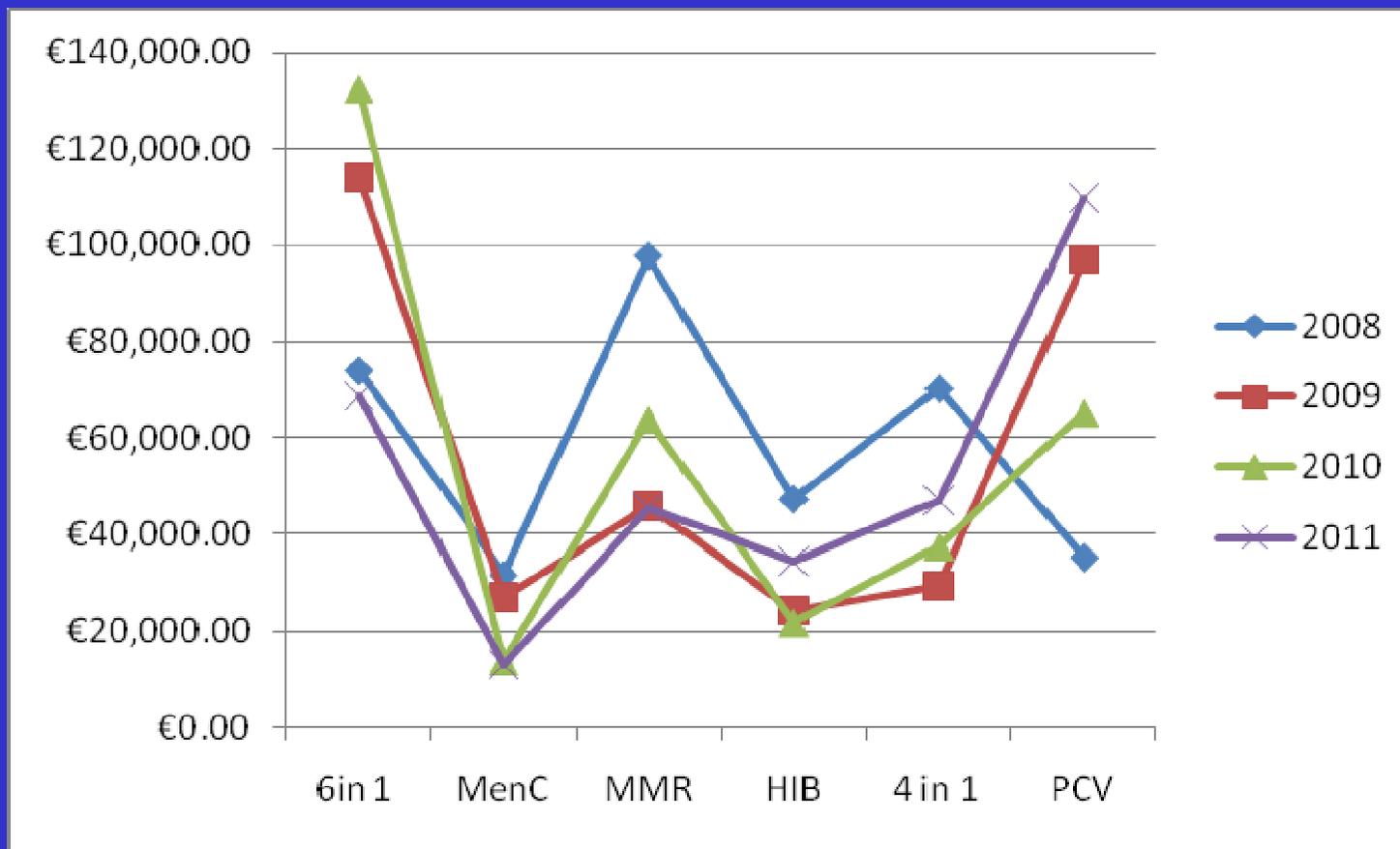
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# Number of Doses Returned annually 2008 -2011



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# Value of Vaccines returned 2008 -2011

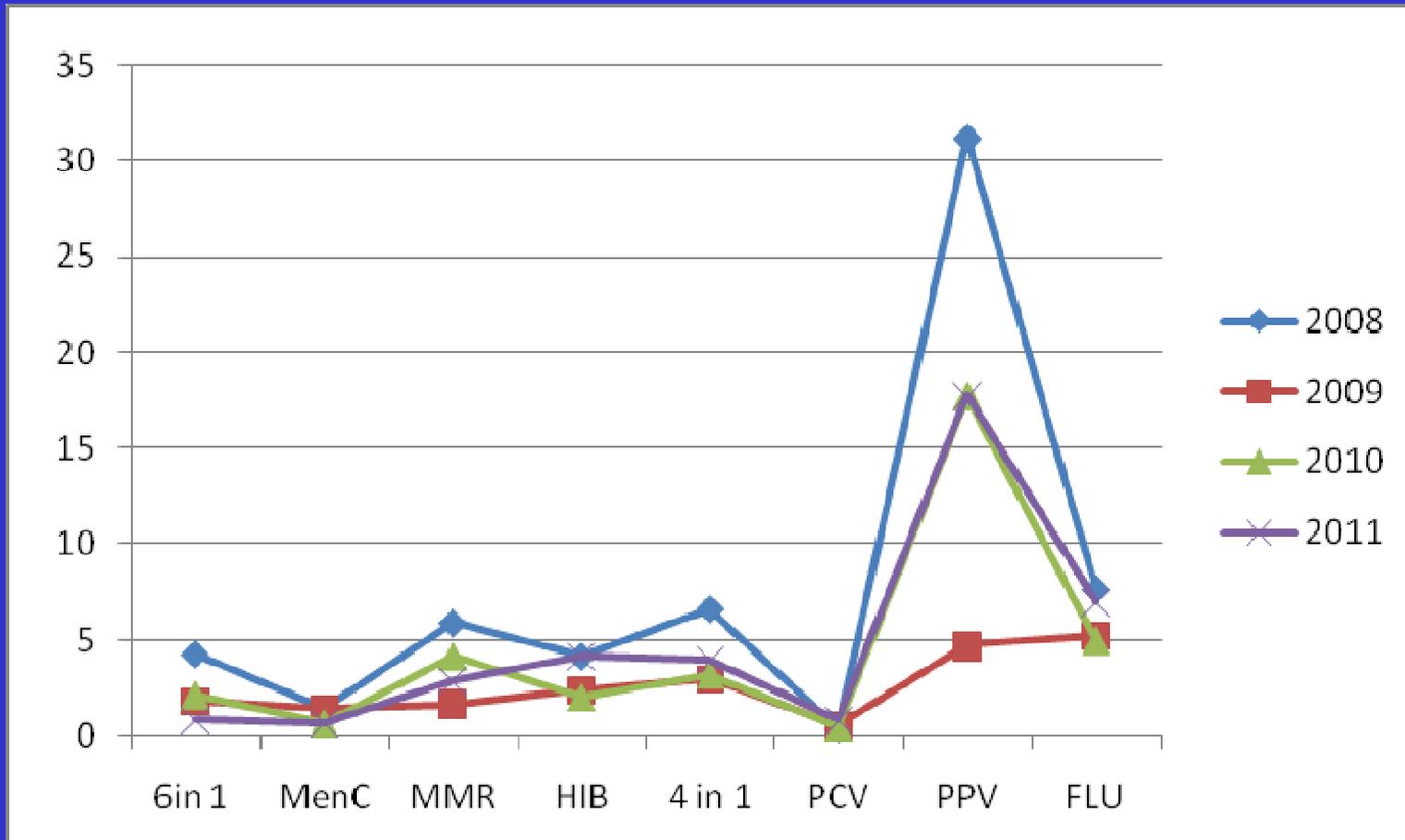


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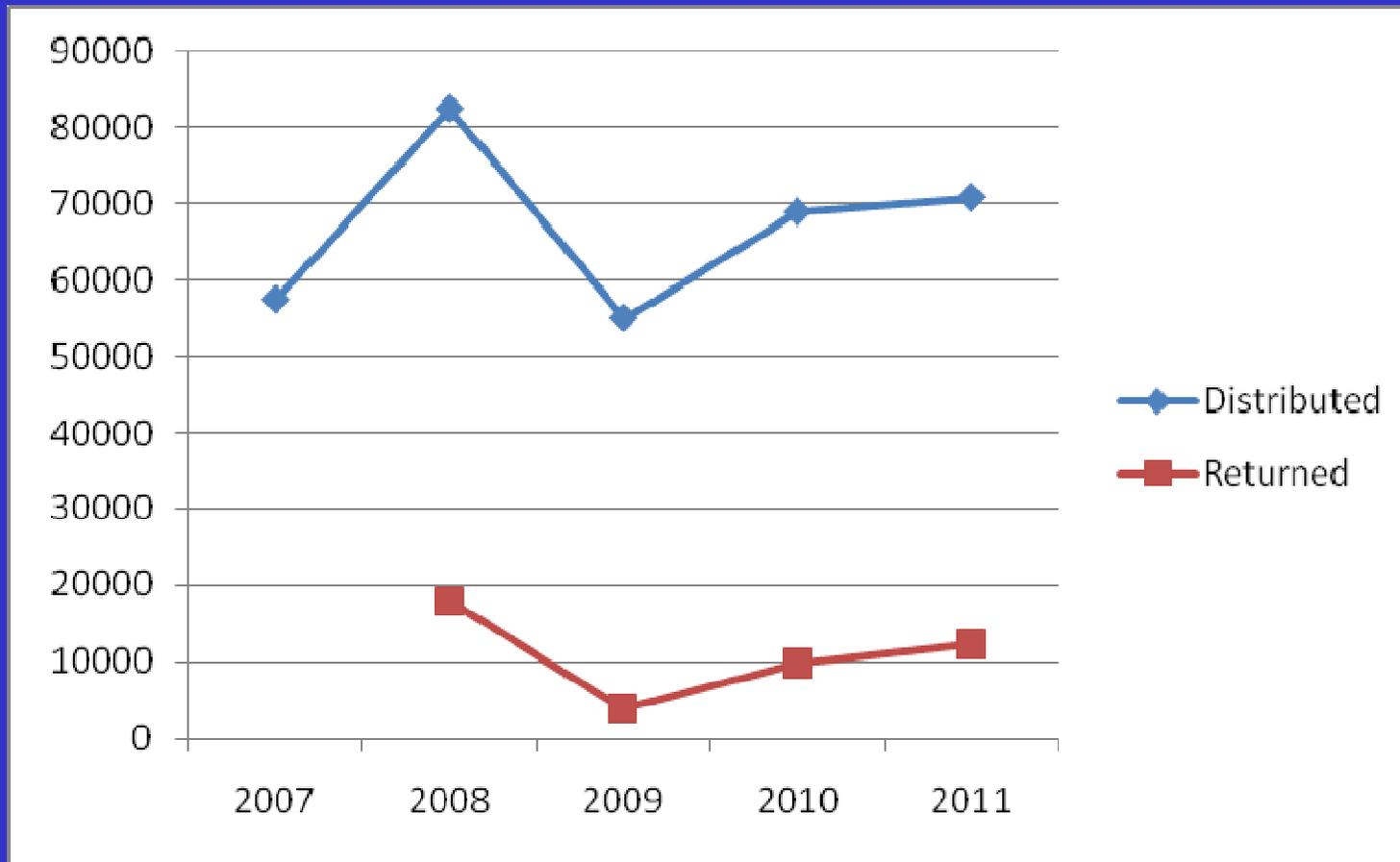
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# Percentage of Vaccines Returned compared to Distributed



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# Pneumovax



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# Recent Immunisation News

- Pneumovax (PPV23) is a once only vaccination for those over 65yrs of age. It is only once repeated after 5 years for those who received it under 65 or those whose antibody levels decline rapidly, e.g asplenia, splenic dysfunction, immunosuppression, renal transplant or chronic renal disease.
- Men ACW<sub>135</sub>Y (Menveo)
- Boostrix



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# Batch Numbers

- The valid batch number is the number on the box and is the only number to record.
- Please use peel off sticker where available.
- Combination vaccines or vaccines which require reconstitution will have a different batch numbers on each constituent, the number on the box refers to the reconstituted vaccine.
- Only the appropriate batch number can be accepted on the child's record, any other batch number will register as invalid.



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# Conclusions

- Vaccines are expensive
- Good housekeeping essential for vaccine management



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# Useful resources

- Australian Government Department of Health and Ageing National Vaccine Storage Guidelines 2005, Strive for 5  
<http://www.health.gov.au/internet/immunise/publishing.nsf/Content/provider-store>
- Department of Health UK. November 2006. Immunisation against infectious disease.  
[http://www.dh.gov.uk/en/Policyandguidance/Healthandsocialcaretopics/Greenbook/DH\\_4097254](http://www.dh.gov.uk/en/Policyandguidance/Healthandsocialcaretopics/Greenbook/DH_4097254)
- Irish Pharmaceutical Healthcare Association Medical Compendium.  
<http://www.medicines.ie>.
- Irish Medicines Board. <http://www.imb.ie>.
- National Immunisation Office Ireland. Health Service Executive.  
<http://www.immunisation.ie>.
- Public Health Agency Canada. National Vaccine Storage and Handling Guidelines for immunisation providers 2007. <http://www.phac-aspc.gc.ca/publicat/2007/nvshglp-ldemv/index-eng.php>.
- Royal College of Physicians of Ireland. Immunisation Guidelines for Ireland. Available at [www.rcpi.ie](http://www.rcpi.ie) or [www.immunisation.ie](http://www.immunisation.ie) or [www.hpsc.ie](http://www.hpsc.ie)



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