Objectives

• To outline the complexity of vaccine management, the importance of cold chain and the delivery service

• To understand the importance of ordering appropriately and the roll out of the new vaccines

• To explain the importance of monitoring the cold chain within your own practice, the correct procedures for handling and storage of vaccines including procedure following cold chain breach and returns service

[www.immunisation.ie]
Factors affecting Vaccine Management Performance

- Procurement & availability of adequate quantities of vaccine
  - Vaccine procurement
  - Correct forecasting
  - Contingency plans
  - Funding
  - Liaison with HPRA

- Reliability of cold chain
  - Use of temperature monitoring devices
  - Cold chain delivery fleet and fridge
  - Alarms and alerts systems
  - Use of freeze of heat indicators during transport
  - Customer education
  - Standard operating procedures

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

- Vaccine Stock Management
  - Short date stock management
  - Invoice processing
  - Stock reconciliation
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

www.immunisation.ie
Why is the cold chain important?

- Vaccines must be stored within a specific temperature range between +2 and +8°C to ensure their potency and to comply with regulations (PA/EU licence).

- Vaccines are sensitive biological products that may become less effective or even destroyed when exposed to less than +2 and greater than +8°C and/or exposed to direct sunlight or fluorescent light.

- Assurance in product potency ensures maximum benefit from immunisation.

www.immunisation.ie
Reliability of Cold Chain

Cold Chain relies on **3** main elements in each of the 3 areas

- manufacturing site
- distribution site
- Provider facility

- Well trained personnel
- Reliable storage equipment & transportation
- Efficient management procedures
Who’s Responsible for 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.

The lower 3 links refer to when the vaccines are your responsibility and they should be covered by the practice insurance.

www.immunisation.ie
National Cold Chain Delivery Service (2nd Link)

• Commenced 1st January 2005, delivering to ~1650 sites annually now has increased to 2,594 sites receiving 2.1 million doses annually

• responsible for ~€37 million annually.

• United Drug Distributors based in Citywest with satellite sites in Limerick and Ballina

www.immunisation.ie
11 Delivery Vans

- Van fridges are equipped with alarms (auditory in cab & text message sent to driver & UD staff) and heating/cooling systems, navigation & location tracking systems.

- Each van has been mapped and 4 temperature probes positioned to record appropriate temperatures
  - Product probe
  - Right side probe
  - Left side probe
  - Air return probe
  Alarm activated once temperature of +3°C or +7°C registered

- Robust contingency plans in case of power failure or breakdowns. 2 fridge units (1 Backup fridge unit) and battery as back up.

- Standard operating procedures govern all processes.

www.immunisation.ie
100 Routes

- Dublin (72% of orders)
  - 60 Routes
  - 3 Vans & 3 drivers
- Limerick (17% of orders)
  - 20 Routes
  - 1 Van & 1 driver
- Ballina (11% of orders)
  - 20 Routes
  - 1 Van & 1 driver

Fortnightly deliveries from September to December

www.immunisation.ie
Annual Vaccine Deliveries

• 2594 sites are entitled to 12 scheduled (monthly) plus 2 extra deliveries during the “flu season”.

• The 12 deliveries are based on 4 weekly cycles (and there are 4 “down” weeks). Between September – November (“flu season”) there are fortnightly deliveries.

• There are an extra ~1000 sites who get only flu / PPV deliveries in flu season.

• Unscheduled

• Emergency

www.immunisation.ie
Vaccine Deliveries in 2016

- Contract is for 14 scheduled deliveries to each site, however in 2016 there will be extra deliveries from beginning of September to December (15 scheduled deliveries to each site).
- Flu vaccine will be available from September 2016 which should be administered by November creating space in the fridge for new vaccines.
- New vaccines will be available from November for administration from December 1\textsuperscript{st} 2016. There will be 2 deliveries in November facilitating smaller order sizes.
Unscheduled / Emergency Deliveries

- Contract is for 14 scheduled deliveries to each site, however in 2016 there will be extra deliveries from beginning of September to December (16 scheduled deliveries to each site)

- Each non scheduled / emergency delivery is an extra charge and cause a disruption to routine deliveries

- Unscheduled deliveries cannot be accommodated between September and December.
Importance of Ordering Appropriately

Vaccine orders are monitored to ensure consistency with target cohort requirements. Significant deviations may indicate over or under stocking, leading to vaccine wastage or missed opportunity to vaccinate.

Each site should order monthly to ensure proper stock levels.
The Number of Doses Distributed Compared to Target Cohort & Corrected to 95% uptake

Axis Title

6in1  PCV  MenC  MMR  4in1  hib

2013  2014  2015

www.immunisation.ie
Cost of Vaccines Purchased

www.immunisation.ie
Actual and forecasted vaccine expenditure 2005 - 2021

- Actual expenditure:
  - 2005: €17.1
  - 2006: €15.8
  - 2007: €14.1
  - 2008: €30.6
  - 2009: €40.3
  - 2010: €36.6
  - 2011: €34.8
  - 2012: €35.3
  - 2013: €36.8
  - 2014: €34.1
  - 2015: €30.7
  - 2016: €28.2
  - 2017: €37.5
  - 2018: €44.1
  - 2019: €44.1
  - 2020: €44.1
  - 2021: €30.7

- Forecast expenditure:
  - 2005: €28.2
  - 2006: €37.5
  - 2007: €44.1
  - 2008: €44.1
  - 2009: €44.1
  - 2010: €44.1
  - 2011: €44.1
  - 2012: €44.1
  - 2013: €44.1
  - 2014: €44.1
  - 2015: €44.1
  - 2016: €44.1
  - 2017: €44.1
  - 2018: €44.1
  - 2019: €44.1
  - 2020: €44.1
  - 2021: €44.1

www.immunisation.ie
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 direct to these sites.

www.immunisation.ie
# Vaccines supplied

<table>
<thead>
<tr>
<th>Vaccines supplied</th>
<th>Vaccines</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Childhood vaccines</strong></td>
<td>6 in 1, Men C, PCV, MMR, Hib, 4 in 1</td>
</tr>
<tr>
<td><strong>Adult vaccines</strong></td>
<td>Td, Tdap</td>
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<tr>
<td></td>
<td>Influenza, Pneumococcal polysaccharide vaccine</td>
</tr>
<tr>
<td><strong>HSE vaccines</strong></td>
<td>BCG, Tuberculin, Tdap/IPV, MMR, Tdap, HPV, Men C</td>
</tr>
<tr>
<td><strong>Restricted vaccines</strong></td>
<td>Hepatitis A, Hepatitis B, Hepatitis A +B</td>
</tr>
<tr>
<td></td>
<td>Td/IPV, Tdap/IPV, MenACW_{135}Y, MenB</td>
</tr>
</tbody>
</table>

Current list of available vaccines

- from United drug
- in newsletter
- on immunisation website

[www.immunisation.ie](http://www.immunisation.ie)
Current Schedule Value of Vaccines per Child

PCI: 6in1, Men C, PCV, MMR, Hib

Junior School: 4in1 and MMR

Secondary School Tdap, MenC and HPV

Indicative price €1,030

www.immunisation.ie
New Schedule Value of Vaccines per Child

- PCI: 6in1, MenB, Rotarix, Men C, PCV, MMR, Hib/MenC
- Junior School: 4in1 and MMR
- Secondary School Tdap, MenC and HPV
- Indicative price €1,350

www.immunisation.ie
Current PCI Schedule

[Image of various vaccine boxes]

[Website link: www.immunisation.ie]
Bexsero – Men B

Bexsero suspension for injection in pre-filled syringe
2 needles- 23G x 25mm & 25G x 16mm
Meningococcal group B Vaccine (rDNA, component, adsorbed)

www.immunisation.ie
Menitorix (Hib-MenC)
Powder and solvent for solution for injection
White powder and a clear colourless solvent
2 Needles 23G x 25mm & 21G x 40mm

www.immunisation.ie
Rotarix®

Oral suspension in pre-filled oral applicators

10 x 1 dose (annostadose)
10 foryld oral applicators
10 oral suspension pre-filled oral applicator

Färdigt att användas! Ingen beredning krävs. 
Klar til bruk! Rekonstituering er ikke nødvendig
Current Schools Immunisation Programme (Junior)
Priorix®

powder and solvent for solution for injection in a pre-filled syringe
Measles, mumps and rubella vaccine (live) 0.5 ml

ACTIVE SUBSTANCES
After reconstitution, 1 dose (0.5 ml) contains:
Live attenuated mumps virus (Schwarz strain) not less than 10^2.0 CPE/0.5 ml
Live attenuated rubella virus (Walter Reiter strain) not less than 10^2.0 D50/0.5 ml

EXCIPIENTS
Vaccine:
- Amino acids
- Lactose (anhydrous)
- Mannitol
- Neomycin sulphate
- Sorbitol
- Phenol red
- Solvent: Water for injections.

10 x 1 dose (0.5 ml)
10 pre-filled syringes + 10 needles
Suspension for injection
Intramuscular use
Shake well before use

Diphtheria, tetanus, pertussis (acellular component) and poliomyelitis (inactivated) vaccine (adsorbed, reduced antigen(s) content)
IPV-Boostrix

- Suspension for injection in pre-filled syringe.
- IPV-Boostrix is a turbid white suspension.
- 10 needles 25G x 25mm
Target cohort for 2016/2017

- Junior Infants should receive IPV- Boostrix
- Older children up to the age of 10 years should receive IPV-Infanrix
MMR Products

Priorix®

powder and solvent for solution for injection in a pre-filled syringe
Measles, mumps and rubella vaccine (live) 0.5 ml

Read the package leaflet before use
Subcutaneous or intramuscular use
Powder and solvent to be reconstituted before use
Shake before use
After reconstitution, use promptly or within 8 hours if stored
in a refrigerator
KEEP OUT OF THE REACH AND SIGHT OF CHILDREN
Store and transport refrigerated
Do not freeze
Do not return reconstituted material to original package in order to protect from light
Dispose of in accordance with local regulations
Powder and solvent for solution for injection in a pre-filled syringe
Medicinal product subject to medical prescription

ACTIVE SUBSTANCES
After reconstitution, 1 dose (0.5 ml) contains
Live attenuated measles virus (Schwartz strain), not less than 10^11 TCID50
Live attenuated mumps virus (Jeryl Lynn strain), not less than 10^4 TCID50
Live attenuated rubella virus (RA 27/3 strain), not less than 10^1 TCID50

IMMUNISATION
1 injection in the deltoid muscle

ABSORPTION
Measles: Peak antibody titre at 2 to 4 weeks
Mumps: Peak antibody titre at 4 to 6 weeks
Rubella: Peak antibody titre at 4 to 6 weeks

ADMINISTRATION
Measles: Standard dose
Mumps: Standard dose
Rubella: Standard dose

DOSEAGE AND ROUTE
Measles: Standard dose
Mumps: Standard dose
Rubella: Standard dose

Tên Sản Phẩm: Priorix®
Loại Sản Phẩm: Vi khuẩn tiêm
Loại Vi khuẩn: Measles, Mumps, Rubella
Dùng cho đối tượng: Người lớn và trẻ em
Sử dụng theo hướng dẫn

Mã H索: 0123456789
Số lượng: 10 vials

GSK
GlaxoSmithKline
School Immunisation Programme
Second Level.
Needle included with vaccines

- Bexsero  23G 25mm + 25g 16mm
- Boostrix  23G 25mm
- Gardasil 23G 25mm + 25g 16mm
- Hiberix 2 x 25G 25mm
- Infanrix Hexa: (10 pack) 20 x 25G 25mm
- IPV-Infanrix  23G 25mm + 25g 16mm
- IPV Boostrix (10 pack) 20 x 25G 25mm
- Menjugate 23G 25mm + 25g 16mm
- Menitorix  23G 25mm + 21g 40mm
- MMRvaxPro  23G 25mm + 25g 16mm
- Prevenar 13 (10 pack) 10 x 25G 25mm
- Priorix (10 pack) 20 x 25G 25mm

www.immunisation.ie
Some typical vaccine orders with Costs

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<tr>
<th>Qty</th>
<th>Vaccine</th>
<th>Qty</th>
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<td>7</td>
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<td>10</td>
<td>IPV-Infanrix</td>
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<tr>
<td>4</td>
<td>MMR</td>
<td>5</td>
<td>Boostrix</td>
<td>20</td>
<td>Boostrix</td>
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<tr>
<td>4</td>
<td>HIB</td>
<td>20</td>
<td>MEN C</td>
<td>40</td>
<td>MEN C</td>
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<tr>
<td>5</td>
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<td>MMR</td>
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<td>5</td>
<td>DITE BOOSTER</td>
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Total €1,067.80

Total €3,353.72

Total €6,830.93

www.immunisation.ie
## New schedule costs

<table>
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<td>3</td>
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**Total** \( €1,786.28 \)

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<td>DITE BOOSTER</td>
</tr>
<tr>
<td>20</td>
<td>BOOSTRIX</td>
</tr>
</tbody>
</table>

**Total** \( €10,082.25 \)

[www.immunisation.ie](http://www.immunisation.ie)
Recommended procedure for ordering and accepting vaccines

• Should have a named, trained and designated person and deputy
• Order on-line before closing date
• Remove expired vaccines from fridge and prepare for return to NCCS driver
• Check vaccine deliveries against the order for damage or discrepancies
• Place vaccines in the vaccine fridge immediately, ensuring the shortest dated vaccine is at the front
• NEVER leave vaccine delivery at room temperature
• Confirm vaccines are covered by practice insurance

www.immunisation.ie
How much vaccine should be ordered?

• Vaccine stocks should be kept to a minimum by regularly ordering only the quantity of vaccine required until the next delivery. The designated person should know how much vaccine stock they require at any one time, according to the size of the target population.

– Restrictions placed by online system
– Maximum of 6 weeks supply should be in the fridge at time of delivery
– During ‘flu season this can be reduced to 3 weeks supply as deliveries will be fortnightly

www.immunisation.ie
Restrictions on New Vaccines

• Bexsero Schedule Months 2 & 4 & 12
  – Quantity of Bexsero restricted to 1/3 of monthly requirements of Infanrix Hexa for first 2 months, then increase to 2/3 until Sept 2017 when equal quantities of both delivered.

• Rotarix Schedule Months 2 & 4
  – Quantity of Rotarix restricted to 2/3 of monthly requirements of Infanrix Hexa

Menitorix Schedule Month 13
  – Available October 2017

www.immunisation.ie
Login

Username/Email:
customer@mcc.com

Account ID:
30030

Password:
*********

LOGIN

Vaccine Ordering

Welcome to www.ordervaccines.ie. This is the online vaccine ordering page from the National Cold Chain Delivery Service. We provide vaccines for publicly funded immunisation programmes to healthcare settings in Ireland.

If you have an account for ordering vaccines but you have not registered for online vaccine ordering please click “Forgotten your Password?” on the left to begin the registration process. If you would prefer to contact customer services we will set you up with an online username and password.

Once you have your username, account number and password please login using the panel on the left.

If you need any help? - Please contact United Drug customer service on 01 463 7770 or vaccines@udd.ie

Forgotten your Password?

United Drug Supply Chain Services

We're committed to keeping our promise, every day. We work with principals, pharmacies and hospitals to shape our services around their requirements. And we get your products to the people who need them – your patients.

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Useful Links

HSE Immunisation Website
United Drug Supply Chain Services
Welcome to your HSE National Cold Chain Dashboard

Messages

<table>
<thead>
<tr>
<th>MESSAGE HEADLINE</th>
<th>DATE</th>
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<tbody>
<tr>
<td>STOCKTAKE REQUIRED</td>
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Last Order - 19 November 2014

<table>
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<tr>
<td>6 in 1</td>
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<tr>
<td>Dite</td>
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<tr>
<td>Men.C</td>
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<tr>
<td>PCV</td>
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Delivery Schedule - November

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<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

- RED on your Calendar is your last date to place order.
- Green on your Calendar is your delivery date.

United Drug Supply Chain Services

We're committed to keeping our simple promise, every day. We work with principals, pharmacies and hospitals to shape our services around their requirements. And we get your products to the people who need them – your patients.

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# Vaccine Order Form

<table>
<thead>
<tr>
<th>VACCINE</th>
<th>PACK SIZE</th>
<th>INDICATIVE PRICE</th>
<th>QTY</th>
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<td>Men C</td>
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<tr>
<td>PCV</td>
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<td>73.80</td>
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</table>

These vaccines must be ordered together in defined ratios. If you only need quantities of individual vaccines please contact customer service.

<table>
<thead>
<tr>
<th>VACCINE</th>
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<th>PRICE</th>
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<td>4 in 1</td>
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<tr>
<td>Boosterix (Tdap)</td>
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<td>Dite</td>
<td>5</td>
<td>63.15</td>
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<td>PCV</td>
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<td><strong>TOTAL</strong></td>
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[CONTINUE TO REVIEW ORDER PAGE](#)
## Vaccine Order Form

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<td>Influenza</td>
<td>10</td>
<td>7.38</td>
<td></td>
</tr>
<tr>
<td>Men C</td>
<td>1</td>
<td>43.05</td>
<td></td>
</tr>
<tr>
<td>MMR</td>
<td>10</td>
<td>20.17</td>
<td></td>
</tr>
<tr>
<td>Pneumococcal</td>
<td>1</td>
<td>21.05</td>
<td></td>
</tr>
</tbody>
</table>

**CONTINUE TO REVIEW ORDER PAGE**

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## Requested Vaccines

You have requested no vaccines, please enter your desired quantities in doses using the vaccine order form on the left.

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**United Drug Supply Chain Services**

We’re committed to keeping our simple promise, every day. We work with principals, pharmacies and hospitals to share our services around their requirements. And we get your products to the people who need them — your patients.

**Useful Links**

- HSE Immunisation Website
- United Drug Supply Chain Services

[www.immunisation.ie](http://www.immunisation.ie)
Delivery Schedule

April 2015

May 2015

June 2015

July 2015

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Useful Links

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www.immunisation.ie
Online Results

Online is now used by 95% of sites

Value of vaccine distributed decreased by 2%

Number of doses distributed decreased by 2%

Number of doses returned for destruction decreased by 2%

Value of vaccines returned for destruction decreased by 19%

www.immunisation.ie
DOSES OF RETURNED VACCINES

PCV
INFANRIX HEXA
4in1
MEN C
MMR
HIB

2014
2015
2016(0.5Yr)

www.immunisation.ie
Number of Doses of returned vaccines Expired compared to Coldchain issues

www.immunisation.ie
% Expired Stock Returned with greater than 6 months expiry

2012: 70%
2013: 30%
2014: 20%
2015: 10%
2016: 0%
Vaccine expired more than 6 months

• **2012**
  44,184 doses - 2TU Mantoux test (expiry 05/2002) was 10 years and two months expired when returned.

• **2013**
  16,753 doses - Pneumovax (expiry 03/2007) was 6 years and three months expired when returned.

• **2014**
  10,737 doses - Pentavac (expiry 09/2002) was 11 years and 6 months expired when returned. Removed from schedule in 2009.

• **2015**
  9168 doses - MMR (expiry 03/2004) was 11 years and 6 months expired & Pentavac also returned.

• **2016**
  3,920 doses - Flu 5 years and 2 months

www.immunisation.ie
Storage of Vaccines & Monitoring of Vaccine Fridge temperature

- Vaccines must be stored in a **Pharmaceutical** fridge
- To comply with product licence, they must be
  - Stored within the temperature range of 2-8°C
  - Stored in original packaging to protect from light & box contains batch details
- Store on shelves, not touching the sides
- Record fridge temperature **twice** daily
- Set fridge to alarm at +3°C or +7°C to allow time to react before +2°C or +8°C is reached
- Wire fridge directly to power without use of a plug and have a dedicated circuit. **Never unplug the fridge**
- Never store out of date vaccines in the fridge

[www.immunisation.ie](http://www.immunisation.ie)
Max/Min Thermometers

- Maximum / Minimum temperatures should be recorded twice daily.
- ENSURE the memory is erased twice daily, in the morning and just before closing surgery, i.e. the maximum, minimum and current temperatures should be checked again and if the thermometer has been correctly reset these three readings should all show the same temperature (i.e. current temperature)
- Recording only shows the highest temperature registered but not the duration.
- Usually the highest recorded temperature is while the door is open.

www.immunisation.ie
Data Loggers

• USB temperature data logger for use with pharmacy fridges independent of fridge power supply

• Measurement range from -35°C to +80°C

• Can store up to a year's worth of data (16,382 readings)

• Flashing LED status indicators mean user can see the status of the logger without having to download data

• They do not replace recording Max/ Min readings twice daily.

www.immunisation.ie
Break in the Cold Chain

• Can occur due to a problem with the vaccine fridge. E.g.
  – Electricity power cut
  – Switch turned off
  – Fridge door left open.
  – Fridge malfunctions

Vaccines should be transferred immediately to a working fridge or power restored.

Never leave vaccines at room temperature

Do not remove them from a working fridge unless instructed to do so by the Chief Pharmacist or Medical officer in NIO.
Recommended procedure following a break in the Cold Chain (1)

Make sure that the fridge is now working properly or transfer to a working fridge.

– Check the temperature and find out how long the fridge breakdown has been

– Send the following to Cliona.Kiersey@hse.ie
  – Name of practice
  – Account number
  – Current fridge temperature
  – Duration of temperature breach
  – Maximum temperature reached
  – Name, quantity and batch numbers of vaccines in the fridge.

Ring for further advice. (087 9915452 or 01 8676108)

www.immunisation.ie
Recommended procedure following a break in the Cold Chain (2)

- Any vaccine not stored between 2\(^0\)-8\(^0\)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.

- Expired and damaged unopened vaccines must not be used and should be removed from the fridge and returned to the NCCS deliveryman with a completed vaccine return form. Vaccine return forms are available to download from http://www.immunisation.ie/en/VaccineOrderingandStorage/.

- Expired and damaged unopened vaccines must not put into a sharps bin.
Details Required after Cold Chain Issue

• Name of practice
• Account number
• Current fridge temperature
• Duration of temperature breach
• Maximum temperature reached
• Name, quantity and batch numbers of vaccines in the fridge.

Send to Cliona.Kiersey@hse.ie

www.immunisation.ie
REMEMBER THE 4Rs

• **Read:** Twice daily readings of the fridge thermometer’s maximum, minimum and current temperatures at the same time morning and evening daily during the working week.

• **Record:** record fridge temperatures in a standard fashion and on a standard form stating date and time of reading and sign/initial (Appendix 1) and download data logger regularly.

• **Reset:** reset the max/min thermometer (i.e. clear the thermometer memory) after each reading and after a period of high activity once temperatures have stabilised and also at the end of every day.

• **React:** the person making the recordings should take action if the temperature falls outside +2°C to +8°C and document this action (Appendix 3).

www.immunisation.ie
Planned power outage

• Keep the room as cold as possible
• Fill your fridge. Place containers of very cold salty water days before the outage in spaces. Double wrap ice blocks with bubble wrap and place on bottom of fridge
• Lock the fridge
• Record the temperature
• Use a Datalogger

www.immunisation.ie
HSE Guidelines for maintenance of cold-chain in vaccine fridges and management of vaccine stock

Recommendations for a planned power outage
“Borrowed Vaccines”

If vaccines are required due to stock out or a fridge issue you can get vaccines from another practice.

Please do not return vaccines to this practice as vaccines should be ordered by them and delivered directly to them from HSE National Cold Chain Service.
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.

www.immunisation.ie
Conclusions

- Vaccines are expensive
- Good housekeeping is essential for vaccine management
Useful resources

- Australian Government Department of Health and Ageing National Vaccine Storage Guidelines, Strive for 5
- Department of Health UK. November. Immunisation against infectious disease.
- Irish Pharmaceutical Healthcare Association Medical Compendium.
  http://www.medicines.ie
  http://www.immunisation.ie.
- Public Health Agency Canada. National Vaccine Storage and Handling Guidelines for immunisation providers.
- Royal College of Physicians of Ireland. Immunisation Guidelines for Ireland. Available at www.rcpi.ie or www.immunisation.ie or www.hpsc.ie

www.immunisation.ie