Safely administering and storing vaccines in the community setting

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The correct storage and administration of vaccines helps to improve the efficacy of vaccines and reduces the chances of lowered vaccine potency (Department of Health, 2013). The cold chain is a term used to describe the maintenance of vaccines at the correct temperature. Vaccines that get too hot or too cold tend to degrade but also fall outside their product licence if not stored appropriately. Local guidelines and/or patient group directions (PGDs) should be in place in all clinical settings that require vaccines to be administered.

Generally, these main principles should be assessed and actioned as listed by the Department of Health (Department of Health, 2014):

- Ordering and delivery
- Storage
- Auditing and monitoring of stock, including checking expiry dates
- Maintenance of the cold chain, including frequent and regular monitoring of fridge performance
- Incident reporting

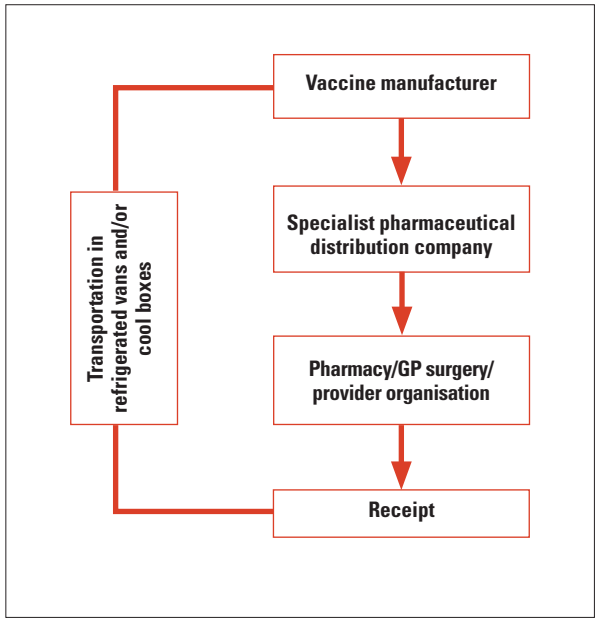

Figure 1. A typical cold chain system for vaccinces (Department of Health, 2013)

Ordering and delivery

Ordering of vaccines needs to be done on a regular basis, avoiding over- or under-ordering and it is recommended that at least two people per clinical setting should be responsible for this. If staff are using vaccines that they do not order then care should be taken to ensure vaccines have been kept at the correct temperature (check the data logger or temperature record book) and ensure that there are sufficient supplies to fulfil the clinic. On delivery of vaccines all staff in the clinical setting should be aware of the reasons for storing vaccines correctly so a protocol that can be used by all may be useful. *Figure 1* adapted from the Green Book chapter 3 (Department of Health, 2013) shows the desired cold chain for vaccines.

Specialist vaccine refrigerators should be used with plenty of space for cold air to circulate with regular temperature monitoring which is recorded and altered if incorrect (between 2–8°C). The mantra 'Read, Record, Reset, React' is a useful one (Department of Health, 2013) and it is suggested that two thermometers are used – especially if a data recorder is not employed (a device kept in the fridge that records the temperature in the fridge at all times from which information can be downloaded for analysis) (Department of Health, 2014).

Fridge failure and incident reporting

In the case of a vaccine fridge failure (freezing is more damaging than warming), the guidance given by Public Health England is useful (Public Health England, 2012) but you should have local guidelines based on this for quarantine and investigation of the vaccines, including their use off licence (agreed by your clinical commissionong group or clinical directorate).

Community clinics and validated boxes

Validated boxes are essential for community clinics and/or home visits as domestic cool boxes should not be used (Public Health England, 2012). These boxes are guaranteed to keep vaccines at the correct temperature for a certain length of time – additionally, a local protocol should be adopted on the return of unused vaccines after a clinic and how and when these vaccines can then be used. Please consult your local lead pharmacist for supply of these boxes and advice on the further use of any returned vaccines.

Stock rotation and audit

Stock rotation and audit (Public Health England, 2012) is a part of vaccine monitoring and if you are responsible for a fridge, it is advised to rotate the stock with short dated vaccines at the front of shelves and regular checking of the stock and the expiry dates. For instance, the live intra-nasal flu vaccine generally only has an 18-week expiry, which all clinicians administering the vaccine should be aware of.

Vaccinating older people and risk groups

The use of influenza and pneumococcal vaccines in older people and risk groups has been shown to reduce morbidity and mortality (Public Health England, 2013) but there are important medico-legal issues to consider when vaccinating these groups. Consent, documentation, competency and correct administration of the vaccine must all be addressed (Health Protection Agency, 2005). Before administering vaccines consent must be sought. Generally, this does not pose problems but where the ability of a patient to give consent may be impaired consider the following, can they:

- Understand the information given to them that is relevant to the decision?
- Retain that information long enough to be able to make the decision?
- Use or weigh up the information as part of the decision-making process?
- Communicate their decision? This could be by talking or using sign language and includes simple muscle movements such as blinking an eye or squeezing a hand (Health Protection Agency, 2005).

The information that is given prior to an injection being given or any procedure being undertaken will validate the consent and the information must be must be relevant and comprehensive – so it needs to be appropriate for this patient. Where it appears that a patient may not have capacity to consent, consider that lucidity and ability to give consent may vary from day to day with some days being better than others. On the days where the patient is unable to consent you will not be able to proceed whether or not you have a relative there who has medical power of attorney (Department of Health, 2009). If in doubt, seek advice from the managing physician (often the GP) and your colleagues or the primary care team (Department of Health, 2009). Do clarify your knowledge around consent because relatives with power of attorney may need some guidance on the use of this.

Documentation

It is important to write it down – if it is not recorded it did not happen. Document things contemporaneously (at the time) and it is not recommended that others record your actions. If this is the case (for example, in community clinics) consider a 10% audit for accuracy on a regular basis (Department of Health, 2013). Record as much information as you can within the short amount of time that you have so that this record will jog your memory. You may need this in the future in any case of medico-legal issues.

Competency and keeping up-to-date

There are some excellent core competencies and update sections for all vaccine related issues in e-Learning for Healthcare (e-Learning for Healthcare, 2017) and you can always refer to the Green Book (Department of Health, 2013) to ensure that you are competent to administer vaccines as this is part of your Nursing and Midwifery Council (NMC) Code of Conduct (NMC, 2015) and fulfils your duty of care to patients. If in doubt, have a thorough read of your PGDs as these tend to give a very good outline of your presenting groups, the vaccines and the indications and contraindications (Public Health, 2015).

Administering vaccines to thin and frail people

Correct injection technique is vital to maintain the efficacy of the vaccine (Cocoman and Murray, 2017). Needle size is important to ensure the vaccine is given intramuscularly as the efficacy of the vaccine's potency is measured according to the vaccine being given correctly (Centers for Disease Control and Prevention, 2017). If for instance you administer the vaccine into the subcutaneous tissue where an intramuscular (IM) route is recommended, this may affect the efficacy of the vaccine. Needle size, for instance 16 mm, would be the minimal size of needle length that should be used to administer IM vaccines with 25 mm being preferable. Gauge is less important but may be a consideration in other more viscous substances – not the case with the majority of IM vaccines.

Common side effects and after care

As part of the consent process you need to be aware of any possible contraindications to the vaccine and discuss possible side effects with the patient. With vaccines these may include a sore red area at the injection site, a mild pyrexia as the body makes immunity to the antigen in the vaccine and sometimes less common side effects may include dizziness and headaches. However, serious side effects like anaphylaxis are extremely rare (World Health Organization, 2017) but this is why it is always important to have an up-to-date anaphylaxis kit with you when administering

vaccines (World Health Organization, 2017). It is always useful to signpost patients with advice on when and why to seek medical advice, within what time span and also to make your usual pre-vaccine checks such as allergy, past/current medical history and likelihood of side effects before you give the vaccine.

Further considerations

When your patient is leaving after the procedure, always take the opportunity to remind about next year's vaccines and also consider if they have recently had a medication review or need some more intensive monitoring of their condition – we must consider patients holistically and consider not just what we are doing for them today but how we generally improve patient outcomes (Moore, 2013). **BJCN**

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