

Objective

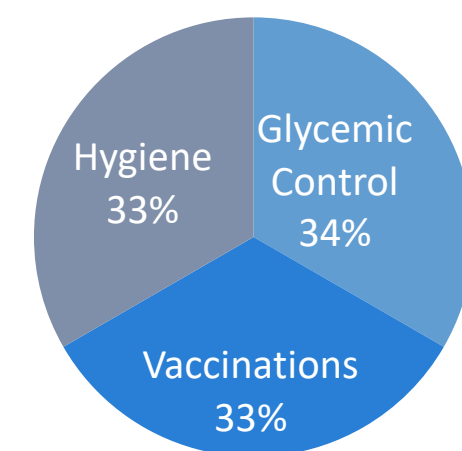
To determine if a practice gap exists among healthcare workers (HCW) in a rural community relating to dissemination of information about the proper disposal of diabetes care-related medical waste including sharps.

Background

An abundance of diabetes care-related medical waste is generated in the US by the 37.3 million persons with diabetes (CDC, 2020). Considering this, diabetes care and education specialists (DCES) must be aware of the proper handling of these items and possible dangers if not handled correctly.

The majority of persons with diabetes (PWD) receive their initial education about the use of blood glucose monitors and injectables from a HCW other than a DCES (Diabetes Care, 2022). It is important that the basic principles of infection control, as they apply to diabetes care, are relayed to PWD by all HCW. The clinic wished to compare their patient's rates of perceived education about the proper disposal to the literature results that only 16% of PWD recall being educated about the concepts.

Concepts of Infection Prevention in Diabetes Care



Concepts of infection prevention as they apply to diabetes care include:

- Vaccinations- Hepatitis A and B, pneumonia, influenza, shingles, and Covid-19.
- Hygiene- bathing, nail care, foot care, wound care, cleansing skin before testing or injections, site-rotation, using a needle only once, no sharing of glucometers, pens, or needles, and proper storage of medications.
- Glycemic control-essential for a strong immune response (Berbudi, Rahmadika, Tjahjadi, & Ruslami, 2020).

Literature Review & Results

From the sources of evidence found using database searches, world-wide research in the area is scant indicating a need for more research. US population studies were few, one meta-analysis, and few recent studies found until search increased to up to 10 years.

- 16% educated in proper handling of waste/sharps (Huang et al., 2018).
- 86% dispose of sharps incorrectly.
- 7% of sharps are flushed down toilet.
- 41% of home-health care workers report at least 1 needle stick in career, second highest rate of exposure after surgeons.
- Needles are re-used up to twenty times (Markkanen et al., 2015).
- Lancets and glucometers are shared by household members.
- Only 15 states have regulations for household medical waste/sharps.
- Only 6 states prohibit sharps in household garbage (LAPPA, 2019).
- Despite increased risk, vaccination rates for PWD are lower than persons without diabetes (Alcusky & Pawasauskas, 2015).

Method & Results

Voluntary patient-reported qualitative data was collected by interview at a rural hospital based out-patient diabetes education clinic in the year of 2021. Adult patients were included if they were already using a glucose meter and/or an injectable prior to their first visit at the diabetes education clinic. Pediatric patients and patients attending the clinic for first-time glucometer or injection training were excluded. The question, "Have you been told how to dispose of your strips, lancets, and/or needles?" was collected during a group DSME class on monitoring and taking medication taught with a pre-existing published curriculum and excluded from IRB approval.

Twenty-seven qualitative self-reports were collected. Sample demographics included: 100% white Caucasian, English as primary language, 99% type-II, 1% gestational diabetes. 89% female, 44% >age 64, 33% age 45-64, and 22% age 19-44. One patient (3%) reported having been instructed in proper handling of diabetes care-related medical waste prior to the educational encounter.

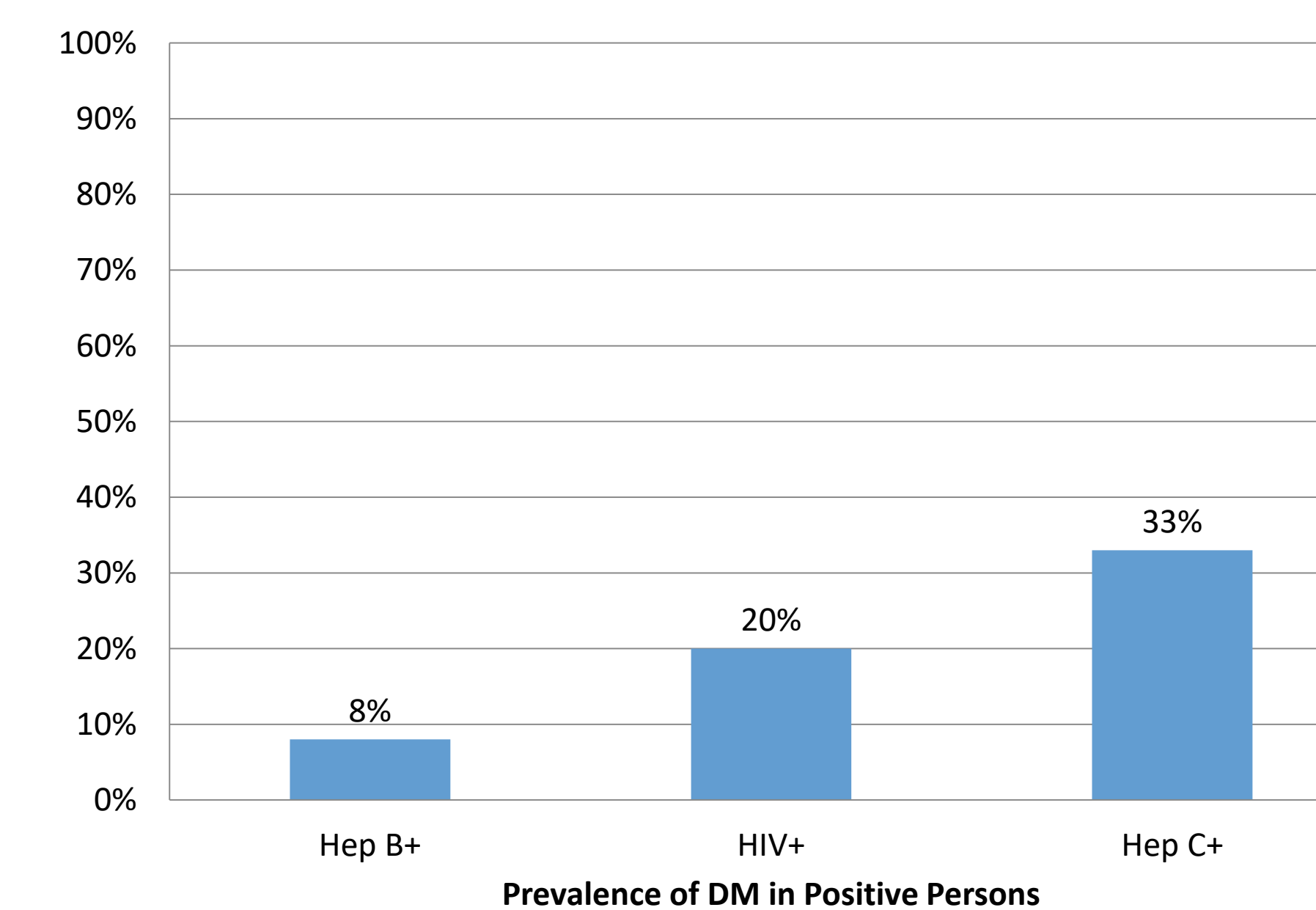
Dangers of Exposure



Loosing this much blood won't hurt you, but getting this much might.

- Association for Professionals in Infection Control (APIC, 2014) states that the risk for converting to positive after a single bloodborne exposure from a positive source is:
 - Hepatitis B-62%
 - Hepatitis C-2%
 - HIV-0.3%

Prevalence of DM in Positive Persons



Cai et al. (2015), McGinnis et al. (2020), Hammerstad et al., (2015).

Conclusion

At the sampled clinic, less than 3% of patients reported being previously educated about proper handling of diabetes care-related medical waste and sharps. The clinic results were much lower than the published rates and confirm that an educational practice-gap does exist. Recent studies are lacking and may present future research opportunities. Considering DCES see less than 7% of PWD and the copious amounts of waste generated by the population, collaboration is needed with all members of the healthcare team to ensure that education about the proper handling of diabetes care-related medical waste and sharps is conveyed to PWD. In response, a poster and an educational handout were developed and approved by the facility for distribution amongst the staff and patients.

Handout Developed



Household Sharps

Examples of sharps and medical waste are: lancets, strips, needles, syringes, injection pens, insertion sets, medication vials, etc. The best way to protect individuals from injury and disease is to follow these guidelines for containment and disposal of household generated medical waste and sharps.

Directions

- Use a puncture-proof plastic container with a tight-fitting screw top such as a plastic detergent bottle or bleach bottle. Don't use glass because it can break.
- Label the container clearly by writing "sharps" with a waterproof marker directly on the container.
- Place the used item into your container, needle-end down. Do not re-cap, bend, or break the item. Screw the top back on the container.
- It is OK to put waste (strips and empty medication vials, pens, or syringes) in the same container.
- Keep the container away from children.
- When the container is full, screw on the cap tightly and seal it with heavy-duty tape.
- TAKE PROPERLY CONTAINED HOME SHARPS CONTAINERS TO ANY HOSPITAL OR SKILLED NURSING FACILITY FOR FREE DISPOSAL.
- NYS no longer requires recording of your name and address to dispose of sharps/waste.
- DO NOT put expired pills in this container. Dispose of in a medication return box (as in our ER lobby).
- DO NOT put sharps containers out with the recyclables, trash, or flush down the toilet.

Contact

Kathleen M. Hebdon, RN, MSN, CDCES
Bertrand Chaffee Hospital
khebdon@bch-jbr.org
716-592-9643

References

Pictures and graphs: Kathleen M. Hebdon, RN, MSN, CDCES
References available by request.