April 2019

SUBCUTANEOUS DMPA ACCESS COLLABORATIVE

Household waste disposal in DMPA-SC self-injection programs

Background and recommendations

Photo: PATH/Gabe Bienczycki

PATH

JSI

Purpose of this presentation

- Share background and resources on appropriate sharps disposal.
- Present country practices and evidence on disposal from DMPA-SC self-injection studies or projects.
- Offer disposal options and considerations for contraceptive self-injection program design and planning.

Audience

- Country stakeholders and decision-makers developing DMPA-SC self-injection programs and plans.

Key points

- DMPA-SC self-injection offers benefits for women and health systems—household-level sharps disposal is one of many operational considerations for its introduction.
- Waste disposal should be part of design and planning of DMPA-SC self-injection programs.
- Efforts to strengthen waste management guidance, policies, and systems support DMPA-SC self-injection and other self-care programs.
- Where existing waste management systems are weak, guidance should be developed considering broader health system capacity.
  - Attention to or investments in household-level disposal could drive broader healthcare waste management system improvements.
- This area is still evolving.
  - Emerging DMPA-SC self-injection programs will provide important lessons to further inform appropriate, innovative solutions.

Self-injection can improve contraceptive access and choice

- Self-injection offers a new channel for delivering injectable contraception, including reaching first-time users.
- Research from low-resource settings shows that women, including those with limited education, are able to self-inject safely and effectively.
- Self-injection appears to improve contraceptive continuation.
- Self-injection can be cost-effective relative to DMPA-IM injections from providers.
- Self-injection is both convenient and empowering, giving women more control over their choice and use of family planning.
- Approximately 8 countries are currently planning for, or have already initiated, self-injection programs.

For more info: *Special issue on subcutaneous DMPA*. Contraception. 2018;98(5):375-462.
https://www.sciencedirect.com/journal/contraception/vol/98/issue/5

Photo: PATH/Dave Simpson

PATH

JSI

Appropriate disposal is an operational consideration for self-injection program design and planning

- Good health care waste management is part of infection control.
- Substantial guidance on sharps waste management is available for facility and community levels.
  - WHO recommends appropriate disposal of sharps at the site of use into a puncture-resistant container without recapping. No reuse or overfilling the container.[1,2]
- Guidance specific to household-level sharps disposal is a gap in many countries.
  - Experience to date: DMPA-SC self-injectors tend to dispose of spent units similarly to other self-injectors (e.g. insulin users).
  - Community-level waste management guidance may offer good practices and evidence for household-level disposal.
  - Self-injection programs may provide an opportunity to strengthen household waste management practices.

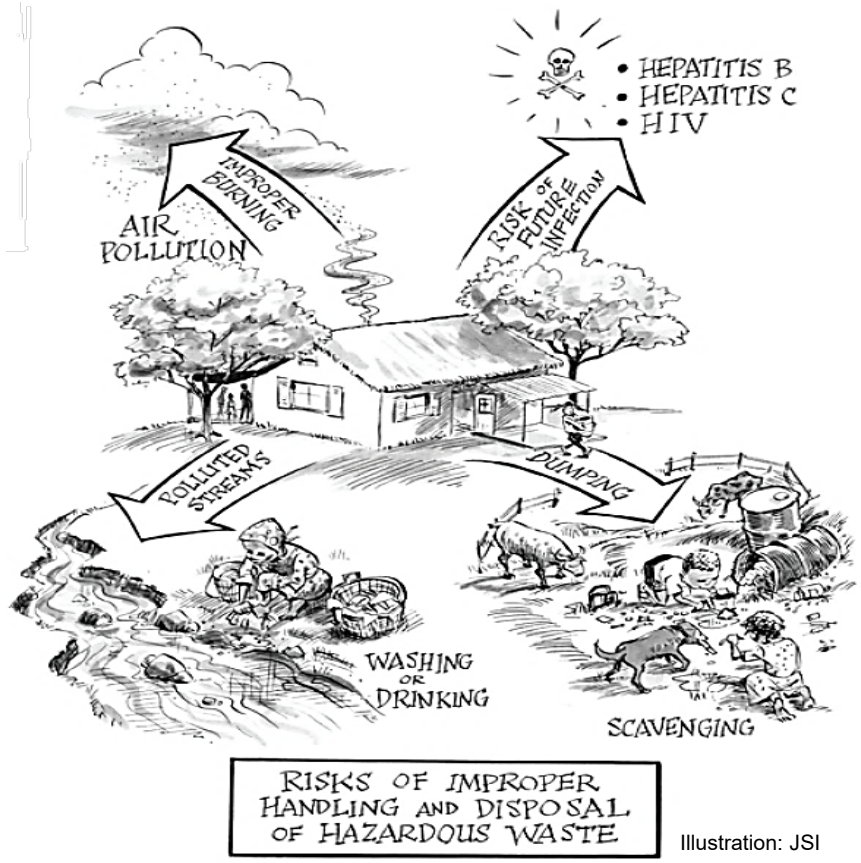


Illustration: JSI

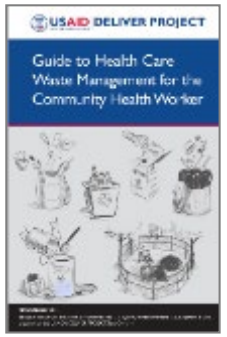
1. Hutin Y, Hauri A, Chiarello L. et al. Best infection control practices for intradermal, subcutaneous, and intramuscular needle injections. *Bulletin of the World Health Organization*. 2003;81(7). https://www.who.int/bulletin/volumes/81/7/Hutin0703.pdf

2. World Health Organization (WHO). *WHO Best Practices for Injections and Related Procedures Toolkit.* Geneva: WHO; 2010. https://apps.who.int/iris/bitstream/handle/10665/44298/9789241599252_eng.pdf

Health care waste management resources

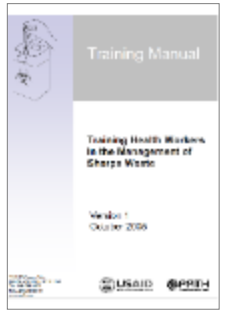
Facility and community levels

World Health Organization. *Safe management of wastes from health-care activities, 2nd ed*. Geneva: World Health Organization; 2014. https://apps.who.int/iris/bitstream/handle/10665/85349/9789241548564_eng.pdf



USAID | DELIVER PROJECT, Task Order 4. *Guide to Health Care Waste Management for the Community Health Worker.* Arlington, VA: USAID | DELIVER PROJECT, Task Order 4; 2011. http://apps.who.int/medicinedocs/documents/s21550en/s21550en.pdf

Eberle J, Allain L, Nersesian P. *Logistics of Health Care Waste Management: Information and Approaches for Developing Country Settings*. Arlington, VA.: USAID | DELIVER PROJECT, Task Order 1; 2009. http://apps.who.int/medicinedocs/documents/s21551en/s21551en.pdf



PATH. *Training Health Workers in the Management of Sharps Waste, Version 1.* Seattle: PATH; 2005. https://path.azureedge.net/media/documents/TS_sharps_waste_training.pdf

Secretariat of the Basel Convention and World Health Organization. *Preparation of national health-care waste management plans in Sub-Saharan countries: guidance manual*. Geneva: World Health Organization; 2005. https://apps.who.int/iris/bitstream/handle/10665/43118/924154662X.pdf

DMPA-SC self-injection waste disposal evidence

Self-injectors have disposed of used units in a number of ways

Containment and disposal in Ghana, Malawi, Senegal, Uganda

- Clients instructed to place used device in a puncture-proof container, then dispose of device in a latrine or return to a health worker.
  - Except for studies in Ghana and Uganda, women were not provided with a container; were instructed to use one from their household.
  - Containment and disposal instructions were not described in reports from DRC and Kenya.

Findings

- In studies where clients were instructed to contain the used device in a puncture-proof container before disposal, most did so.
  - In Senegal, containment of the used device in a puncture-proof container declined a bit in the course of three injections.
- In most study countries, disposal in a pit latrine was the most common final disposal method.
  - In both Senegal and Malawi, use of a pit latrine for disposal increased with subsequent injections.
- Some results may be influenced by the study design.
  - For instance, in Senegal, clients were visited by nurses for follow-up interviews, so they knew they could keep the used units to return to the study nurse.

Please see Annex for detailed study findings on how women disposed of used DMPA-SC devices.

Two disposal experiences from Uganda

PATH-MOH self-injection feasibility study

(Cover et al., 2017)

- Advised women to *store* used DMPA-SC devices in a self-sourced, puncture-proof container, and *dispose* of them in a latrine or return to a health worker.
  - 71.5% of women reported storing used devices in a puncture-proof container before final disposal.
  - 93.8% of women disposed of used devices in a latrine as final disposal method.

Key points

- Women like the latrine disposal method, but it is not viewed positively by national and subnational health systems leaders.
- Burning with household garbage was suggested by stakeholders, but it is not clear whether that is a sustainable option.
- Women seemed open to storing in a puncture-proof container and returning devices at their convenience to facilities, a community health worker, or drug shop for safe disposal.

PATH's Self-injection Best Practices project (2017–2019)

- *Provides* women with low-cost puncture-proof lidded container and advises women to *store* used devices until they can return to a health worker or facility for safe disposal.
- Women are instructed to *store* used, uncapped devices in the container, then carefully *transfer* them to a health worker's or facility's sharps box so they can reuse the puncture-proof container.

→ *Findings to come.*

Available disposal guidance for self-injectors

US and UK examples of needle disposal guidance for self-injectors

Guidance key points

- Use of dedicated, puncture-resistant sharps containers.
- Disposal of sharps containers in designated areas or via community or national services, for example:
  - Drop-off collection sites
  - Hazardous waste centres
  - Residential special waste pickup services
  - Syringe exchange programs
  - Mail-back services
  - Home needle destruction devices

These options are a high standard based on injection safety best practices. They could serve as a model for household-level containment and drop-off, or containment and collection.

www.fda.gov/safesharpsdisposal

www.gov.uk/government/publications/guidance-on-the-safe-management-of-healthcare-waste

www.epa.gov/rcra/protect-yourself-protect-others-safe-options-home-needle-disposal

Guidance on household-level needle disposal practices: An informal survey of five countries

Informal survey conducted by the DMPA-SC Access Collaborative

- National diabetes and/or pharmaceutical associations
- Burkina Faso, Kenya, Madagascar, Senegal, and Uganda

Findings

- No standard guidelines or policies on management of used needles *at household level*, in any of the countries surveyed.
- Disposal suggestions depend on provider and context, and include:
  - Burn
  - Bury
  - Throw in pit latrine
  - Dispose (protected in a container) with general household waste
  - Store in a container and return to facility

Disposal considerations for DMPA-SC self-injection program planning

DMPA-SC could reduce waste management burden at facility and community levels, compared to DMPA-IM

DMPA-SC produces less waste than DMPA-IM, reducing cost and simplifying waste handling

- DMPA-SC produces 70% less waste by volume than DMPA-IM + SoloShot syringe.
- DMPA-SC takes up less space in safety boxes.
  - Requiring fewer safety boxes for the same number of injections.
  - Lowering costs associated with disposal supplies.
- No glass vial disposal challenges are associated with DMPA-SC.
- DMPA-SC reduces risk of environmental contamination since the Uniject device's plastic reservoir can be incinerated.

Photo: PATH/Patrick McKern

PATH. 2011. Depo-subQ in Uniject: Planning for Introduction Briefing Summary: Logistics and waste management benefits of depo-subQ in Uniject.

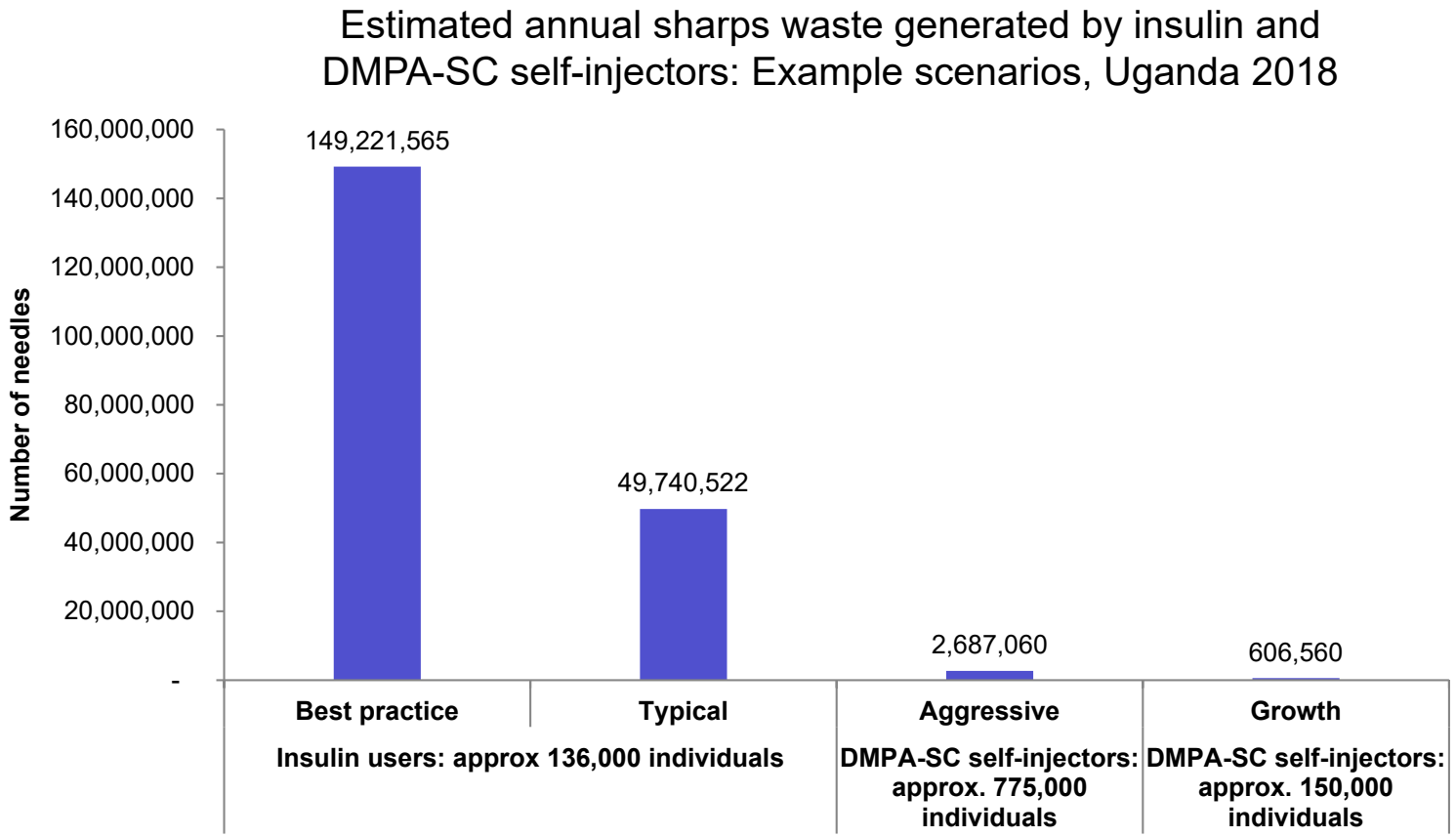
Magnitude of waste from DMPA-SC self-injection is small in context of self-administered insulin

- Per WHO, household level or home treatment is a minor source of healthcare waste.
- At household level, the amount of DMPA-SC waste is minimal: a maximum of four units per year per user.[1]
- Other self-administered injectable medicines, such as insulin, likely generate more sharps waste at household level.

Photo: PATH/Gabe Bienczycki

1. Chartier Y, et al. editors. *Safe management of wastes from health-care activities*. 2nd ed. Geneva: World Health Organization; 2014. www.who.int/water_sanitation_health/publications/wastemanag/en/

Even in ambitious SI uptake scenarios, estimated needle waste from SI is less than self-administered insulin



Needle waste scenarios

Best practice

- No insulin needle reuse.[3]
- Three used needles per insulin user per day.

Typical

- Insulin needles reused three times.
- One used needle per insulin user per day.

Aggressive

- Half of all current DMPA clients (IM and SC) self-inject DMPA-SC.

Growth

- Half of current DMPA-SC clients self-inject.

Assumptions and data sources

- Estimates of diabetes prevalence and insulin use: WHO, research[1,2]
- Uganda population estimates: United Nations
- Contraceptive prevalence rate and method mix: PMA2020 Uganda R6
- DMPA-SC self-injectors generate four used needles per year.

1. Hall et al. Diabetes in Sub Saharan Africa 1999-2011: Epidemiology and public health implications. a systematic review. *BMC Public Health* (2011), https://doi.org/10.1186/1471-2458-11-564
2. Manne-Goehler et al. Diabetes diagnosis and care in sub-Saharan Africa: pooled analysis of individual data from 12 countries. *Lancet Diabetes Endocrinol* (2016), http://dx.doi.org/10.1016/S2213-8587(16)30181-4
3. Worldwide mean insulin needle reuse (3.2 for regular syringe). De Coninck et al. Results and analysis of the 2008–2009 Insulin Injection Technique Questionnaire Survey. *Journal of Diabetes* 2 (2010) 168–179 http:// doi: 10.1111/j.1753-0407.2010.00077.x

Appropriate disposal should be part of self-injection program design and planning

- During initial rollout of DMPA-SC self-injection, countries may want to test different disposal options.
  - Feasible, realistic disposal options that maximize client convenience support adherence.
- Disposal options should:
  - Align with national healthcare waste management regulations and household-level guidance for self-administered medicines (where guidance exists).
  - Minimize risk of needlestick injuries and infection transmission.
  - Consider cost implications for both client and health system.
  - Consider scalability of practice.
  - Reflect growing evidence.
  - Be described in informative materials for clients and discussed by providers.
- Disposal should be addressed in program guidance, provider training, and client training.

PATH/Will Boase

Countries should weigh disposal options for program guidance

Disposal method	Pros	Cons
Containment, then drop-off or collection for final disposal	• Puncture-proof container protects client and others from needlestick injuries • Senegal/Uganda analyses show self-injection can still be cost-effective if container provided • Shifts final disposal from household back to health system where practices are more established	• Can be inconvenient for client to return used devices • Client or health system must source an appropriate puncture-proof container • Drop-off or collection options all have cost implications for clients or health systems • Some needlestick risk transferring devices from containers to final disposal location (if guidance not followed) • Containers can add to waste volume
Burning	• Common practice for household waste, especially in rural areas • Destroys biological hazard • Private (if the client is the trash burner)	• Temperature may not be high enough to fully destroy needle • Environmental concerns that have not been quantified (e.g., toxicity from burning plastic)
Burying	• Many units can be buried • Removes from circulation	• Requires availability of land • May be accidentally excavated or exposed by runoff during rainy seasons • Labor intensive, especially to strictly follow guidelines • Environmental concerns that have not been quantified (e.g., plastic chemicals or residual drug in reservoir leach into soil)
Pit latrine (not composting toilet)	• Accessible in rural areas • Removes from circulation • Private	• Less available in urban areas • Environmental concerns that have not been quantified (e.g., plastic chemicals, needles in fecal sludge)
Household garbage	• Urban households may have garbage collection services	• Questionable waste handling practices in many areas • Spent units and uncapped needles may end up in landfills accessible to people and animals

Annex: Ways DMPA-SC self-injectors disposed of used units

Practice	Uganda feasibility	Uganda continuation	Senegal feasibility	Senegal continuation	DRC feasibility	Kenya feasibility	Malawi RCT	Ghana
Stored used device in container until disposal	72%	2nd injection (78%) 3rd injection (73%) 4th injection (73%)	49%	2nd injection (72%) 3rd injection (64%) 4th injection (55%)	N/A	N/A	A few of those interviewed	2nd injection (99%) 3rd injection (98%)
Disposal in a pit latrine	93.8%	2nd injection (95%) 3rd injection (96%) 4th injection (98%)	49%	4th injection (48%)	42%	74%	2nd injection (92%) 3rd injection (94%) 4th injection (99%)	
Other disposal methods reported	Returned to clinic (3%) Kept for study nurse (2%) Household garbage (1%)	Still have device injection 2 (3%) injection 3 (2%) Put it in a safety box injection 4 (2%)	Returned to clinic (11%) Kept for study nurse (36%) Household garbage (3%)	Kept for study nurse 2nd injection (59%) 3rd injection (46%) Safety box (11%)** Returned to health center (4%)** Household garbage (1%)**	Trash can (52%) Discarded outside (12%)	Through health facility (19.2%) Compost pit (2.2%) Burning (0.2%)	Trash (<1%)** Burned (<1%)**	

***Percentages represent 4th injection only. Data on other 2nd and 3rd injection practices are available in the articles – see References slide.*

References

Cover J, Namagembe A, Tumusiime J, Lim J, Kidwell Drake J, Mbonye AK. A prospective cohort study of the feasibility and acceptability of depot medroxyprogesterone acetate administered subcutaneously through self-injection. *Contraception*. 2017;95(3):306-311. https://doi.org/10.1016/j.contraception.2016.10.007

Cover J, Namagembe A, Tumusiime J, Nsangi D, Lim J, Nakiganda-Busiku D. Continuation of injectable contraception when self-injected vs. administered by a facility-based health worker: a nonrandomized, prospective cohort study in Uganda. *Contraception.* 2018;98(5):383-388. https://doi.org/10.1016/j.contraception.2018.03.032

Cover J, Ba M, Lim J, Kidwell Drake J, Daff BM. Evaluating the feasibility and acceptability of self-injection of subcutaneous depot medroxyprogesterone acetate (DMPA) in Senegal: a prospective cohort study. *Contraception.* 2018;96(3):203-210. https://doi.org/10.1016/j.contraception.2017.06.010

Cover J, Ba M, Kidwell Drake J, Dia Ndiaye M. Continuation of self-injected versus provider-administered contraception in Senegal: a nonrandomized, prospective cohort study. *Contraception.* 2018;99(2):137-141. https://doi.org/10.1016/j.contraception.2018.11.001

Bertrand JT, Bidashimwa D, Bakutuvwidi Makani P, Hernandez JH, Akilimali P, Binanga A. An observational study to test the acceptability and feasibility of using medical and nursing students to instruct clients in DMPA-SC self-injection at the community level in Kinshasa. *Contraception.* 2018;98(5):411-417. https://doi.org/10.1016/j.contraception.2018.08.002

Malonza I. Prospective study of the feasibility, acceptability and continuation of self-injection of subcutaneous depot medroxyprogesterone acetate (DMPA) in Kenya: Key Findings. Presented at: DMPA-SC SI Study Dissemination Meeting, July 17, 2018; Nairobi, Kenya.

Burke HM, Chen M, Buluzi M et al. Women's satisfaction, use, storage and disposal of subcutaneous depot medroxyprogesterone acetate (DMPA-SC) during a randomized trial. *Contraception.* 2018;98(5):418-422. https://doi.org/10.1016/j.contraception.2018.04.018

Burke HM, Packer C, Buluzi M, Healy E, Ngwira B. Client and provider experiences with self-administration of subcutaneous depot medroxyprogesterone acetate (DMPA-SC) in Malawi. *Contraception.* 2018;98(5):405-410. https://doi.org/10.1016/j.contraception.2018.02.011

Nai D. Sayana® Press Self-injection Feasibility and Acceptability Study in Ghana. Presented at: the International Conference on Family Planning, November 15, 2018; Kigali, Rwanda.

For more information:

www.path.org/dmpa-sc

FPoptions@path.org

supplychain@jsi.com


PATH


JSI