



COMMENT ON UMPIERREZ AND KLONOFF

## Diabetes Technology Update: Use of Insulin Pumps and Continuous Glucose Monitoring in the Hospital. *Diabetes Care* 2018;41:1579–1589

*Diabetes Care* 2019;42:e14 | <https://doi.org/10.2337/dc18-1929>

Juan Jose Delgado-Hurtado,  
Alicia Armstrong, and  
Sushela Chaidarun

We read the interesting literature review article by Umpierrez and Klonoff (1) on the use of insulin pumps and continuous glucose monitoring in the hospital. Figure 1 in the article gives recommendations on the changes to pump therapy with imaging studies. It suggests that for patients managed with an insulin pump in the hospital who are having an MRI, the pump and metal infusion set should be removed. It also suggests that when having an X-ray or CT scan, the pump should be covered by a lead apron. Although we agree with the first recommendation, we question the amount of evidence supporting the latter recommendation.

The U.S. Food and Drug Administration has received some reports on adverse events during CT imaging of insulin pumps, including hypoglycemia and diabetic ketoacidosis (2). Although they suggest there is no evidence of direct causation when compared with the effects of CT irradiation on implantable cardioverter defibrillators and pacemakers, there is no equivalent evaluation of insulin pumps in these settings. In fact, many insulin pump

user manuals suggest that insulin pumps can be affected by radiation and recommend that they be removed and kept away from radiation (3,4), while some suggest, alternatively, that they can be covered completely by a lead apron (5). The recommendations from some user manuals seem to be in conflict with the information included in the figure and potentially could lead to questions related to patient safety and product warranty if a pump malfunctions.

The American Diabetes Association and American Association of Clinical Endocrinologists recommend that patients who use insulin pumps in the outpatient setting can be candidates for diabetes self-management in the hospital. As the number of insulin pump users increases and continuing insulin pumps in the inpatient setting becomes a common practice, we believe it is important to clarify the safety of using an insulin pump when getting these imaging studies and whether covering the device with lead apron is an alternative for all insulin pumps. If it is an alternative, user manuals

should be updated and patients informed.

**Duality of Interest.** No potential conflicts of interest relevant to this article were reported.

### References

1. Umpierrez GE, Klonoff DC. Diabetes technology update: use of insulin pumps and continuous glucose monitoring in the hospital. *Diabetes Care* 2018;41:1579–1589
2. U.S. Food and Drug Administration. Interference between CT and electronic medical devices [Internet], 2018. Available from <https://www.fda.gov/Radiation-EmittingProducts/RadiationSafety/ElectromagneticCompatibilityEMC/ucm489704.htm>. Accessed 8 September 2018
3. Medtronic Minimed, Inc. Minimed 670 G System User Guide [Internet], 2017. Available from <https://www.medtronicdiabetes.com/sites/default/files/library/download-library/user-guides/MiniMed-670G-System-User-Guide.pdf>. Accessed 8 September 2018
4. Tandem Diabetes Care, Inc. t:slim Insulin Pump User Guide [Internet], 2017. Available from <https://www.tandemdiabetes.com/docs/default-source/product-documents/t:slim-insulin-pump/updated-t-slim-user-guide.pdf>. Accessed 8 September 2018
5. Animas Corporation. Animas Vibe Owner's Booklet [Internet], 2016. Available from [https://www.animas.com/sites/animas.com/files/pdf/41031300F\\_OB\\_Vibe\\_USen\\_Peds\\_R1.pdf](https://www.animas.com/sites/animas.com/files/pdf/41031300F_OB_Vibe_USen_Peds_R1.pdf). Accessed 8 September 2018

*Endocrinology, Diabetes and Metabolism, Dartmouth-Hitchcock Medical Center, Lebanon, NH*

Corresponding author: Juan Jose Delgado-Hurtado, [juan.j.delgado.hurtado@hitchcock.org](mailto:juan.j.delgado.hurtado@hitchcock.org)

© 2018 by the American Diabetes Association. Readers may use this article as long as the work is properly cited, the use is educational and not for profit, and the work is not altered. More information is available at <http://www.diabetesjournals.org/content/license>.