**Supplementary Appendix 1. Systematic Review Methods and Search Strategy**

**Methods**

A systematic review was conducted to identify original research describing the administration of magnesium (sulfate) given via subcutaneous infusion for treatment of hypomagnesemia in adults or children. We searched the OVID versions of MEDLINE (from 1966-April 9th 2018), EMBASE (1974-April 9th, 2018) and SCOPUS (2004-April 9th 2018), combining the key concepts subcutaneous AND magnesium. Additionally, to identify grey literature we used the Google Advanced search and reviewed the first 5 pages of links. One reviewer screened studies for inclusion and extracted relevant data. We limited the results to citations with at least an English language abstract. One reviewer manually searched reference lists from retrieved articles and review articles/guidelines to identify additional studies.

**Search Strategy: Medline/Embase**

1. subcutaneous\*.ti,ab,kw.

2. exp Fluid Therapy/ae, mt [Adverse Effects, Methods]

3. hypodemoclys\* .ti,ab,kw.

4. Injections, Subcutaneous/

5. or/1-4

6. exp MAGNESIUM/ad, bl [Administration & Dosage, Blood]

7. (magnesium or hypomagnesemia).ti,ab,kw.

8. exp Magnesium Deficiency/di, th [Diagnosis, Therapy]

9. or/6-8

10. 5 and 9

11. animals/

12. humans/

13. 11 not (11 and 12)

14. (rat or rats or mouse or mice or rodent\* or porcine or swine).mp.

15. 13 or 14 [animal studies]

16. 10 not 15

17. 16 use ppez

18. (subcutaneous\* or hypodermoclys\*).ti,ab,kw.

19. fluid therapy/

20. subcutaneous drug administration/

21. or/18-20

22. magnesium/ad, do, dt [Drug Administration, Drug Dose, Drug Therapy]

23. (magnesium or hypomagnesemia).ti,ab,kw.

24. magnesium deficiency/di, dt, th [Diagnosis, Drug Therapy, Therapy]

25. or/22-24

26. 21 and 25

27. animal/

28. human/

29. 27 not (27 and 28)

30. (rat or rats or mouse or mice or rodent\* or porcine or swine).mp.

31. 29 or 30 [animal studies]

32. 26 not 31

33. 32 use oemezd

34. 17 or 33

35. remove duplicates from 34

**SCOPUS:** TITLE-ABS-KEY ( ( subcutaneous\*  OR  hypodermoclys\* )  W/5  ( magnesium  OR  hypomagnesemia ) )

**“Grey Literature” via Google (Advanced Search):** All of these words: Home AND subcutaneous AND fluids AND magnesium