Towards an Ontology to Support Decision-making in Hospital Bed Allocation (TSE)

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I. Rules

Our ontology aims to help decision making about the beds where patients can be allocated according to the bed allocation constraints. Thus, we establish rules that propagate information about restrictions by registered individuals. We are aware that a lot of rules can be created to help decision making related to bed allocation in hospitals. We present the ones we created for our ontology in Table I.

TABLE I
Rules of the Ontology

Rules
1. $Patient(?X), Man(?X) \rightarrow is-of-the-gender(?X, Male)$
2. $Hospital\_Bed(?Y), Bedroom(?Z), is-in(?Y, ?Z), bed-is-isolation(?Y, ?I) \rightarrow bedroom-is-isolation(?Z, ?I)$
3. $Patient(?X), has-one(?X, ?A) \rightarrow is-routing(?X, ?A)$
4. $Hospital\_Bed(?Y), Bedroom(?Z), is-in(?Y, ?Z), bedroom-is-the-attendance(?Z, ?A) \rightarrow bed-is-the-attendance(?Y, ?A)$
5. $Patient(?X), is-routing(?X, ?E), Hospital\_Bed(?Y), occupy-one(?X, ?Y) \rightarrow bed-is-routing(?Y, ?E)$
6. $Hospital\_Bed(?Y), Bedroom(?Z), is-in(?Y, ?Z), bed-is-stay(?Y, ?P) \rightarrow bedroom-is-stay(?Z, ?P)$
7. $Hospital\_Bed(?Y), Bedroom(?Z), is-in(?Y, ?Z), bed-is-puerperal(?Y, ?Q) \rightarrow bedroom-is-puerperal(?Z, ?Q)$
8. $Hospital\_Bed(?Y), Bedroom(?Z), is-in(?Y, ?Z), bedroom-is-speciality(?Z, ?S) \rightarrow bed-is-speciality(?Y, ?S)$
9. $Hospital\_Bed(?Y), Bedroom(?Z), is-in(?Y, ?Z), bed-is-speciality(?Y, ?S) \rightarrow bedroom-is-speciality(?Z, ?S)$
10. $Patient(?X), Woman(?X) \rightarrow is-of-the-gender(?X, Female)$
11. $Patient(?X), is-care(?X, ?C), Hospital\_Bed(?Y), occupy-one(?X, ?Y) \rightarrow bed-is-care(?Y, ?C)$
12. $Patient(?X), is-puerperal(?X, ?Q), Hospital\_Bed(?Y), occupy-one(?X, ?Y) \rightarrow bed-is-puerperal(?Y, ?Q)$
13. $Patient(?X), is-the-attendance(?X, ?A), Hospital\_Bed(?Y), occupy-one(?X, ?Y) \rightarrow bed-is-the-attendance(?Y, ?A)$
14. $Patient(?X), is-stay(?X, ?P), Hospital\_Bed(?Y), occupy-one(?X, ?Y) \rightarrow bed-is-stay(?Y, ?P)$
15. $Hospital\_Bed(?Y), Bedroom(?Z), is-in(?Y, ?Z), bed-is-routing(?Y, ?E) \rightarrow bedroom-is-routing(?Z, ?E)$
16. $Hospital\_Bed(?Y), Bedroom(?Z), is-in(?Y, ?Z), bed-is-of-the-age-group(?Y, ?G) \rightarrow bedroom-is-of-the-age-group(?Z, ?G)$
17. $Patient(?X), Urgent(?X) \rightarrow Hospitalisation(?X)$
18. $Hospital\_Bed(?Y), Bedroom(?Z), is-in(?Y, ?Z), bedroom-is-of-the-age-group(?Z, ?G) \rightarrow bed-is-of-the-age-group(?Y, ?G)$
19. $Hospital\_Bed(?Y), Bedroom(?Z), is-in(?Y, ?Z), bedroom-is-of-the-gender(?Z, ?H) \rightarrow bed-is-of-the-gender(?Y, ?H)$
20. $Patient(?X), is-isolation(?X, ?I), Hospital\_Bed(?Y), occupy-one(?X, ?Y) \rightarrow bed-is-isolation(?Y, ?I)$
21. $Patient(?X), is-speciality(?X, ?S), Hospital\_Bed(?Y), occupy-one(?X, ?Y) \rightarrow bed-is-speciality(?Y, ?S)$
22. $Hospital\_Bed(?Y), Bedroom(?Z), is-in(?Y, ?Z), bedroom-is-routing(?Z, ?E) \rightarrow bed-is-routing(?Y, ?E)$
23. $Patient(?X), is-of-the-gender(?X, ?H), Hospital\_Bed(?Y), occupy-one(?X, ?Y) \rightarrow bed-is-of-the-gender(?Y, ?H)$
24. $Patient(?X), is-of-the-age-group(?X, ?G), Hospital\_Bed(?Y), occupy-one(?X, ?Y) \rightarrow bed-is-of-the-age-group(?Y, ?G)$
25. $Hospital\_Bed(?Y), Bedroom(?Z), is-in(?Y, ?Z), bed-is-the-attendance(?Y, ?A) \rightarrow bedroom-is-the-attendance(?Z, ?A)$
26. $Hospital\_Bed(?Y), Bedroom(?Z), is-in(?Y, ?Z), bedroom-is-care(?Z, ?C) \rightarrow bed-is-care(?Y, ?C)$
27. $Hospital\_Bed(?Y), Bedroom(?Z), is-in(?Y, ?Z), bedroom-is-isolation(?Z, ?I) \rightarrow bed-is-isolation(?Y, ?I)$
28. $Hospital\_Bed(?Y), Bedroom(?Z), is-in(?Y, ?Z), bedroom-is-puerperal(?Z, ?Q) \rightarrow bed-is-puerperal(?Y, ?Q)$
29. $Hospital\_Bed(?Y), Bedroom(?Z), is-in(?Y, ?Z), bed-is-of-the-gender(?Y, ?H) \rightarrow bedroom-is-of-the-gender(?Z, ?H)$
30. $Hospital\_Bed(?Y), Bedroom(?Z), is-in(?Y, ?Z), bedroom-is-stay(?Z, ?P) \rightarrow bed-is-stay(?Y, ?P)$
31. $Hospital\_Bed(?Y), Bedroom(?Z), is-in(?Y, ?Z), bed-is-care(?Y, ?C) \rightarrow bedroom-is-care(?Z, ?C)$