

SUMMARY OF RECOMMENDATIONS

1. Island Health analyze and correct the medication ordering process that allows medication doses exceeding accepted dose ranges to be ordered.
2. Island Health implement a dose checking algorithm for high risk medication orders to ensure that prescribers are alerted to excessive doses or frequencies. Dispensing doses above recommended levels should require an explanation from the prescriber and be covered by a clinical care policy.
3. As part of the quality assurance measurement system for medication use, Island Health concurrently monitor high risk medication dosing, timing of administration, route of administration and duplicate orders for the same medication in a patient.
4. To remove the risk of missed medication doses when patients are transferred, Island Health create an algorithm that alerts pharmacy and the ward that medications have not been given when a patient is transferred.
5. Island Health address the issue of medication orders persisting on the Medication Administration Record (MAR). In this context, Island Health review its policy permitting multiple narcotics and multiple routes to be ordered concurrently for any patient. A patient specific algorithm should be developed that allows for patients who require concurrently administered narcotics by different routes. Health care providers for all other patients should be alerted when multiple orders and routes are placed.
6. To ensure that reports are provided to the physicians who are responsible to take action upon them, Island Health review their education curriculum to ensure that users are aware of the processes to designate an individual as the most responsible physician for all or part of a patient's care and how to flag other individuals for copies of results and information.
7. Island Health ensure that diagnostic imaging, laboratory and other test results, provided by NRGH or other Vancouver Island facilities are being received by the providers responsible to take action on them.

8. Island Health monitor the messaging system to ensure that the correct responsible individual(s) are receiving communications.
9. Island Health implement a process that consolidates nursing and other observations and displays this information on the patient summary layouts for every type of user.
10. Island Health ensure that the ability to match a monitor and/or ventilator to a patient is restricted to designated users and that bar coding or other technology be used to ensure the integrity of the patient/monitor (ventilator)/location match.
11. Recognizing the dependency of the all care processes on the IHealth system, Island Health provide an analysis of system failures (network outages, system and machine hang-ups, peripheral failures and peripheral mismatches) and upgrade hardware where the network and work stations are underpowered for the demands placed on them.
12. Island Health review down time procedures and the function of “down time computers”, and establish a preventative maintenance and testing schedule.
13. The Ministry of Health redesign the PharmaNet system to allow for the full integration with the IHealth (and other EHR) in the Province.
14. Island Health simplify the user interface to include only the clinically required parts of a process or workflow and base these design changes on human factors, interface design principles and user co-design.
15. Island Health correct errors in terminology and ensure Canadian context is reflected throughout the EHR (e.g., Celsius vs Fahrenheit).
16. Island Health conduct a staffing assessment in all future rollouts and where the re-designed processes result in a change in workflow, the staffing needs and the scope of responsibilities for all staff members (including non-regulated employees) be incorporated into the planning. Where it is determined there is a gap (pre-existing or as a result of the re-designed process), Island Health develop a plan to staff to levels that enable learning

while working for implementation, stabilization, and the future state as required.

17. Island Health review their current practices with respect to paper ordering and how that process uses the team (physicians, nurses, support personnel, pharmacy and other departments) and develop a policy and process for computerized order entry in urgent situations that optimizes the process by fully utilizing the team and the system.
18. Island Health commit to staffing support (physician, nursing and support staff) in the NRGH emergency department to achieve patient volumes within 10% of pre-go live levels in anticipation of a return to full CPOE after the workflow and process review and improvement.
19. Island Health use the results of the revalidation process to inform a decision regarding the future medication ordering process used in the ED and ICU.
20. Island Health undertake a workflow and system design review separate from order set review and rebuilding. Reconvene reconfigured clinical user groups to include users from NRGH and future implementation site(s). Using this group of users, supported by Cerner and IHealth program experts, assess the NRGH experiences for each of the clinical areas listed in the Provider Education Strategy.
 - a) Consider “work as done” and not just “work as imagined” when reviewing workflows, in particular the documentation and ordering processes. Clarify what new best practices are needed for patient care and share these practices with the relevant Island Health user committees. Incorporate their input into refreshed workflow before any effort is made to integrate this workflow(s) into the IHealth system.
 - b) Simplify the workflows and data entry/ordering to provide the majority of users with one process for workflows relevant to their job that is/are simple and intuitive. Eliminate structured data entry and interface items where there are no clinical care reasons for having such data and create data entry and display layouts that support care. Circulate these workflow changes through medical and clinical communication channels

(departments, divisions, programs) for discussion and confirmation before implementing into practice.

- c) Engage provincial bodies, whose role is to define standards of care in BC, so that care plans, order sets and documentation schema are based on their standards to enable consistent implementation province-wide for the EHR products. Where provincial bodies do not exist, engage in a process to harmonize workflows with the implementation teams in the lower mainland.
 - d) Simplify the user interface to include only the clinically required parts of a process or workflow and base these changes on human factors, interface design principles and user co-design.
21. Island Health incorporate the following into the education plan being developed for NRGH and future implementations:
- a) Provide clarification of the strategic goals of IHealth for users and reconcile differences in these goals with those of front-line care providers;
 - b) Provide the rationale for workflow changes that will shift work between users (e.g., data collection, parameters for ordering or administrative tasks such as registration);
 - c) Explain to every user, based on the work they do, how the system is organized, describe underlying assumptions, terminology, what background rules exist and how and when they are triggered and what they do to the data;
 - d) Clarify the auditing functions that are operational in the background so that users are aware of when and how tracking of changes in data entry and orders is done and who has access to the audit trail;
 - e) Develop a curriculum that provides individual training and knowledge for the trainee's role;

- f) Train teams so that members understand their roles and how the system will affect these roles and their interactions;
 - g) Develop post-go live training for individuals and teams who want to optimize the system for their work (power users)
22. Island Health clarify for all users the reporting methods, processes and expectations for IHealth related events, both technical and sociocultural to ensure learning from the observations of users and to ensure that the review processes have the highest integrity. Feedback on the status of an issue should be provided directly to the reporter(s) if known, within a specified period of time known to the reporter.
- a) For issues already submitted, Island Health should close the loop on all user reported observations with the individual reporter, if known, and the relevant user population.
 - b) Island Health should develop a communication plan to ensure all users of the system are aware of how to access and use the reporting methods. Specifically, with respect to PSLS submissions, Island Health should provide ongoing feedback describing the time lines for analysis and results of investigation to those who have submitted reports.
 - c) User observations submitted through the reporting systems, their review and fixes should inform the re-development of the IHealth learning environment
 - d) Island Health resource the IHealth team to ensure the response to reported issues can be provided in the time interval appropriate for a live system.

23. **Phase 1. Functional Capability revalidation in the BC context Recommendation**

That the NRGH medical staff and Island Health join in a process to revalidate the order entry and clinical documentation capabilities of the IHealth system and test the ability and suitability of the implemented functionality to meet the clinical care needs of patients based on current clinical workflows. The revalidation process will be supervised by an oversight committee. This committee will receive the results of the clinical reviews and will develop options to address situation(s) where the functionality as provided, does not address the clinical needs in the Island Health context.

24. **Phase 2. Moving forward in Nanaimo and Island Health Recommendation**

Based upon the results of the revalidation of order entry and documentation functionality and the determinations of the Oversight Committee, a plan for moving forward should be developed.

25. All parties re-commit to working through areas of conflict.

26. Where violations of Island Health organizational policies are revealed, actions should be taken as defined by the relevant policy.