S15-3

Point of Care Connectivity and More

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In Laboratory Medicine point of care (POC) testing is here to stay. Full electronic connection of POC results into the Laboratory Information System (LIS) allows patient monitoring and ward or institution result trends. This action can be performed whether within a single institution, with remote institutions or even from a patient's home. POC middleware offers a POC management team another layer of control including registering POC users, documenting training and quality control result review, to name a few. We have developed our own applications integrating with LIS and middleware to enhance our support of POC services. For example, an application for user competency testing incorporates results from both the written and practical components for all users. For successful users, their user status will be extended. A notification system for re-competency testing will automatically trigger the ward nurse manager two months prior to the expiry of the users' access. The high number of POC users and the remoteness of many of these users have pushed NUH to develop different applications, both big and small, for our POC management team, where human resources, in particular laboratory qualified POC staff, are premium.

S16-1

Long-Term Outcome of Newborn Glucose-6-Phosphate Dehydrogenase (G6PD) Deficiency Screening Program in Taiwan

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Severe neonatal jaundice (NJ) triggered by environmental factors and/or medications is the major health impact of G6PD deficiency in newborns. If not prevented or treated properly, it may lead to kernicterus and cause death or permanent neurological damage. The incidence of G6PD deficiency in Taiwan is about 2%. It has been found that 30% of NJ admitted to hospital was G6PD deficient with 16% mortality and 32% developed kernicterus in 1970s. The nationwide newborn G6PD screening program in Taiwan was started in 1987 and the coverage rate has reached >99% since 1996. The effectiveness of this screening program to prevent mortality and sequela of NJ is studied.

The patient data of hospital admission with NJ from 2000 to 2010 were retrieved from National Health Insurance Research Database, which covered >98% population of Taiwan. There were 12,828 (0.53%) admissions with NJ from 2,428,341 live births after discharge from birth facilities. G6PD deficiency were reported in 480 (3.7%) of the admitted NJ cases. Only 7 of these G6PD cases (3 with perinatal infection, 1 with ABO incompatibility) were treated with exchange transfusion. 9 of the admitted NJ cases dead within 1 month of age (6 prematurity, 1 sepsis), but none of them was G6PD deficient. Four of the NJ cases developed kernicterus and only one was G6PD deficient (with glycogenosis). The immediately severe morbidity and mortality of all the admitted NJ cases were reduced to 0~4 annually (1.2/year) between 2000 and 2010 nationwide and only 1 of them was G6PD deficient. Long term follow 3,511 NJ cases admitted between 2000 and 2003 up to 7 years old, 35 infantile cerebral palsy cases were found and five of them were G6PD deficient. Besides, the long term follow up also found those admitted NJ cases (with or without G6PD deficiency) having a higher risk of developmental delay, hearing loss, speech disorders, and attention deficit hyperactivity disorder (ADHD) comparing to the control cohort.

The results indicated that the newborn G6PD screening program in Taiwan almost eliminated severe morbidity and mortality caused by NJ with G6PD deficiency after discharge from birth facilities. However, close follow-up of those cases with NJ admission are still needed for early intervention of developmental delay, mental disorders, hearing loss, and speech problems.

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