Use of potassium hydroxide (KOH) test reduces antifungal medication use for suspected monilial diaper dermatitis in the NICU: A quality improvement project

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Introduction

Despite availability of rapid fungal tests, e.g. KOH test, many care providers rely on visual assessment of diaper dermatitis to determine the diagnosis of monilial diaper dermatitis. This may result in overtreatment with anti-fungal topical medicine, with resulting exposure and costs.

Purpose

To implement a quality improvement (QI) project study to determine if the use of a fungal KOH test, when monilial diaper dermatitis (MDD) is suspected, will produce more accurate diagnoses, with decreased antifungal medication exposure.

Example of Monilial Diaper Dermatitis

Diaper Rash

Methods

Design: QI project method with new protocol in 2017 for treatment of MDD after KOH+ testing. Ordering systems were established in collaboration with pharmacists. Staff training was performed. If monilial rash suspected, after two KOH- tests, then antifungal ordered (considered false negative).

Sample: Neonates in two Level III NICUs.

Outcome Variables: KOH test results, use of antifungal medication, cost.

Analysis: Cost was determined. Chi-square testing to determine differences.

Discussion

There was a 65% reduction in the use, and 73% decreased cost, of antifungal agents. Overall cost, including cost of KOH test, increased by 460%, but was still low. One infant received three negative KOH tests, then one positive one. This would have met the definition of a false negative test, per protocol. There were no cases of fungal sepsis.

Providers and managers of care systems will need to weigh the benefits of diagnostic accuracy versus minimal increased costs of KOH testing.

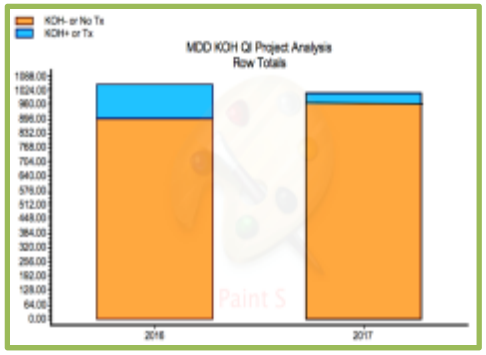
Results

	NICU Census 2 sites	Nystatin #Doses	Nystatin Total Cost $	Miconazole Doses #	Miconazole Total Cost $	Antifungal Total Cost $	Antifungal Any Use #	KOH Test #	KOH Test Pos+	KOH Cost $	Total Cost $
2016	1051	128	640	21	118	758	149	1	1	43	801
2017	1015	33	165	6	39	204	39	81	13	3483	3687

*p=0.0001, 95% CI 0.88-0.93

	KOH- or No Tx	KOH+ or Tx
2016 Before protocol	902	149
2017 After Protocol	963	52

Costs used for Analysis ($)	
Nystatin Cream or Ointment	4.60
Miconazole	7.80
Clotrimazole	1.98
KOH Prep	43.00

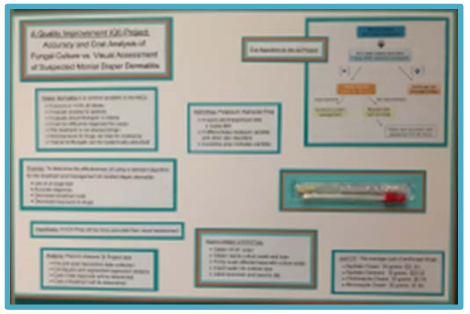


Summary and Conclusion

These results indicate that a QI protocol in which the use of KOH testing is required, before antifungal agents are prescribed, may result in decreased exposure with minimal increased cost.

None of the presenters have any conflict of interest.

Sample of Education Poster



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