

Identification of injured children at very low risk of emergent surgery: a national trauma registry study



מרכז שניידר לרפואת ילדים בישראל
مركز شنايدر لطب الأطفال في إسرائيل
Schneider Children's Medical Center of Israel

SCHNEIDER CHILDREN'S MEDICAL CENTER OF ISRAEL

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Introduction (to chaos)



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Aim

- Predict low risk of emergent surgery in injured children.
- Derive and validate a low-risk rule.





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Methods



ITR:
6 Level 1
14 Level 2
Centers

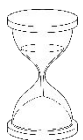
Age 0 - 14
years

Trauma
Admissions

01/2010 -
12/2019



1st: EOI



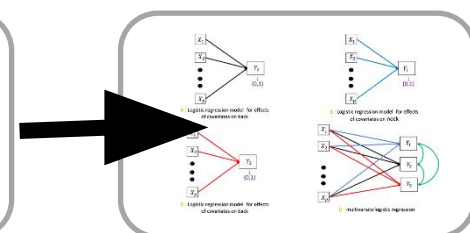
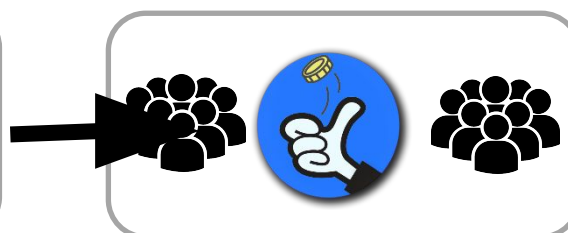
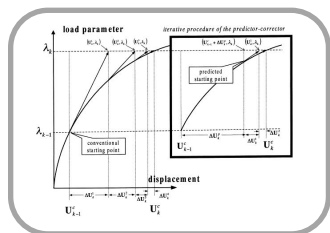
<1 Hour



2nd: UOI



<4 Hour



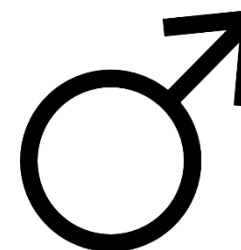
Results: patients



83,859
children



6y (IQR 2-10)



67.8%



1st: EOI



<1 Hour



n = 169 0.20%
(95% CI 0.17%-0.23%)

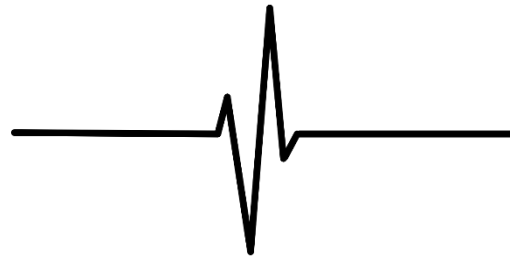
Results: predictors



GCS = 15
 OR = 0.014
 (95% CI 0.01-0.019)



Blunt trauma
 OR = 0.276
 (95% CI 0.186-0.418)



HR ≠ High Risk
 OR = 0.294
 (95% CI 0.176-0.515)



SBP ≠ High Risk
 OR = 0.477
 (95% CI 0.33-0.704)



n=67,816



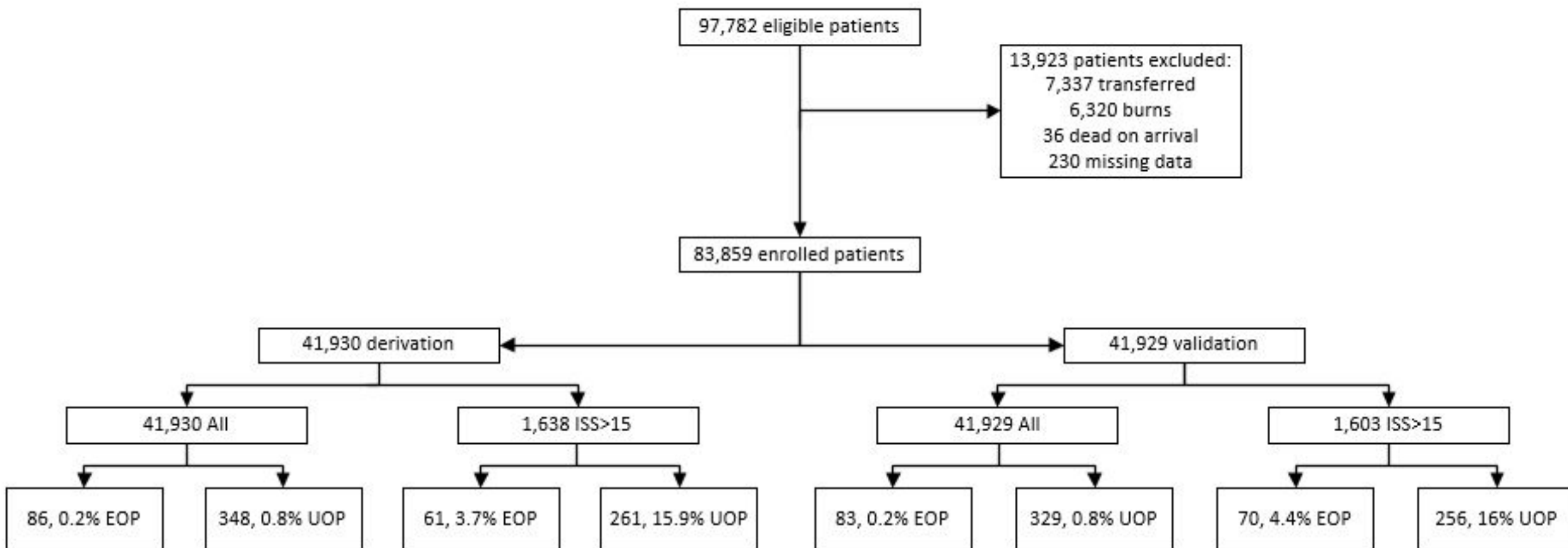
1st: EOI

 <1 Hour



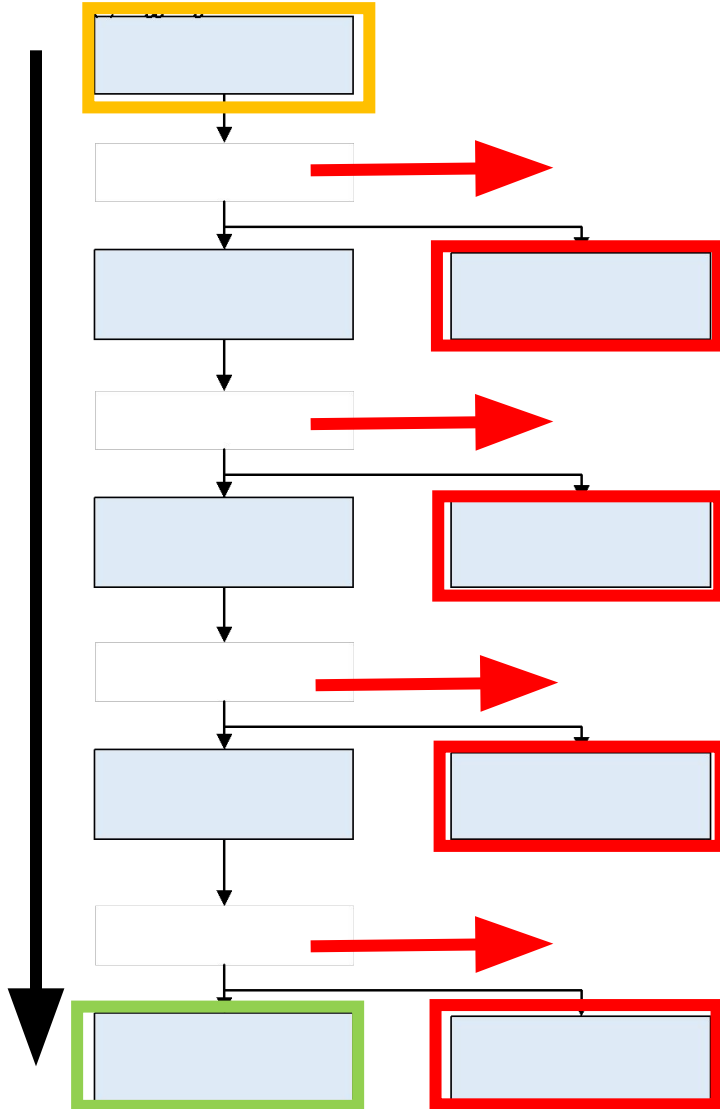
n = 20 0.03%
 (95% CI 0.02%-0.05%)

Results: rules



Results: rules

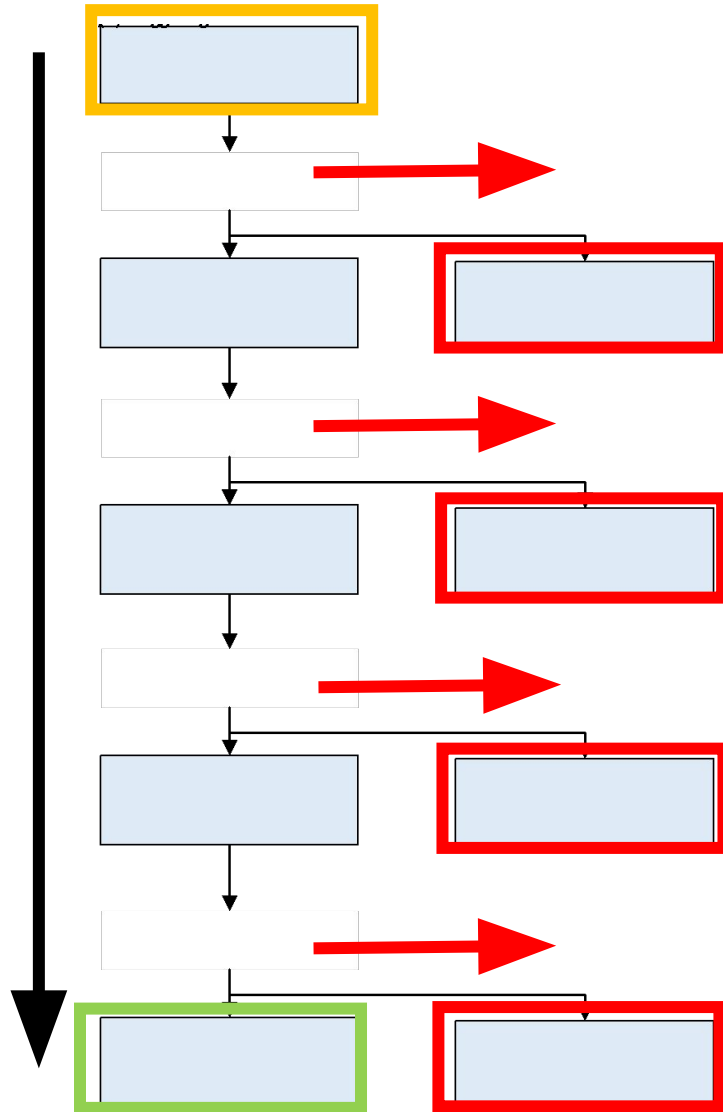
Derivation cohort prediction tree emergent operation



	Derivation			Validation		
	EOP	No EOP	Total	EOP	No EOP	Total
<u>Any predictor present</u>	78	7999	8077	71	7892	7963
<u>No predictor present</u>	8	33845	33853	12	33954	33966
<u>Total</u>	86	41844	41930	83	41846	41929
	Derivation			Validation		
<u>Prediction rule sensitivity (95% CI)</u>	91% (82, 96)			86% (76, 92)		
<u>Prediction rule specificity (95% CI)</u>	81% (81, 81)			81% (81, 82)		
<u>Negative predictive value (95% CI)</u>	100% (100, 100)			100% (100, 100)		
<u>Positive predictive value (95% CI)</u>	1% (1, 1)			1% (1, 1)		
<u>Negative likelihood ratio (95% CI)</u>	0.12 (0.06, 0.22)			0.18 (0.11, 0.30)		

Results: rules

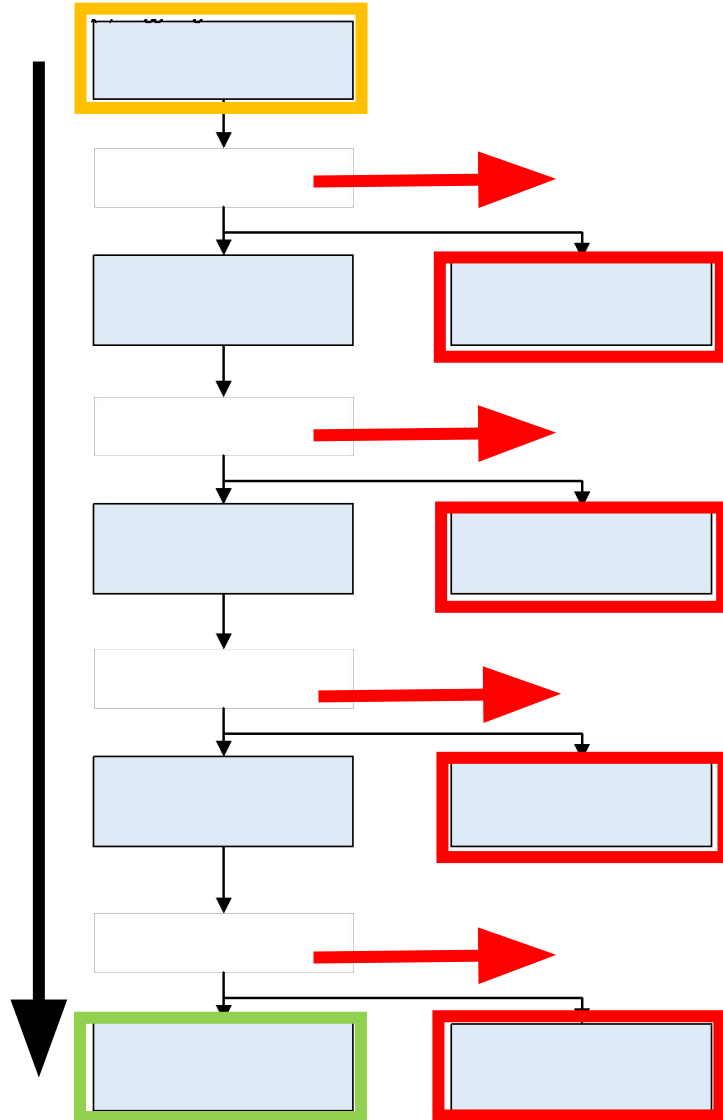
Derivation cohort prediction tree emergent operation (ISS>15)



	Derivation			Validation		
	EOP	No EOP	Total	EOP	No EOP	Total
<u>Any predictor present</u>	57	715	772	62	682	744
<u>No predictor present</u>	4	862	866	8	851	859
<u>Total</u>	61	1577	1638	70	1533	1603
	Derivation			Validation		
<u>Prediction rule sensitivity (95% CI)</u>	93% (84, 98)			89% (79, 95)		
Prediction rule specificity (95% CI)	55% (52, 57)			56% (53, 58)		
<u>Negative predictive value (95% CI)</u>	100% (99, 100)			99% (98, 100)		
Positive predictive value (95% CI)	7% (6, 9)			8% (6, 11)		
<u>Negative likelihood ratio (95% CI)</u>	0.12 (0.05, 0.31)			0.21 (0.11, 0.4)		

Results: rules

Derivation cohort prediction tree urgent operation (<4 hours)

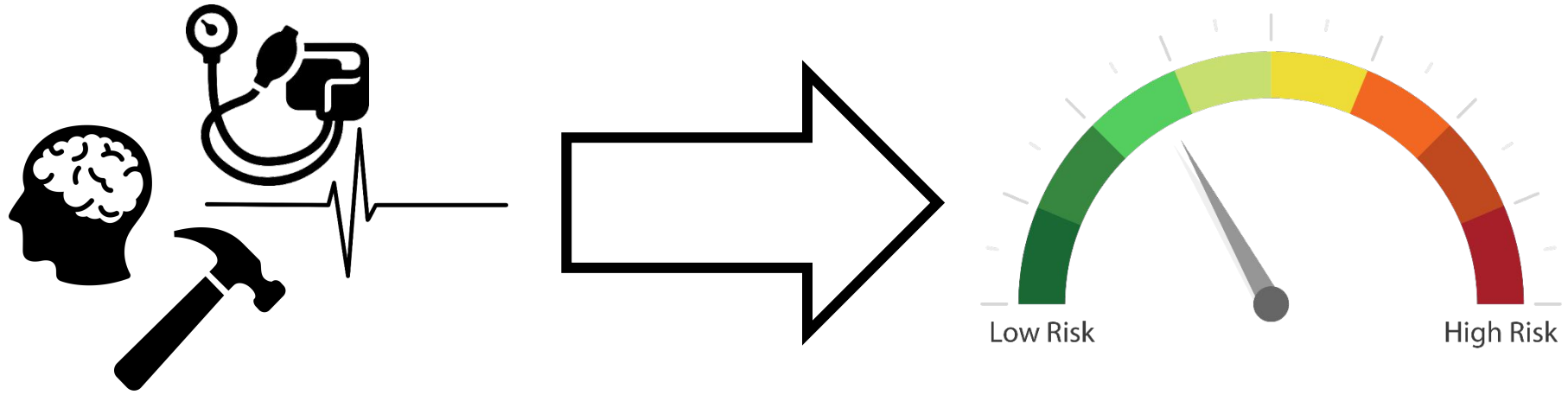


	Derivation			Validation		
	UOP	No UOP	Total	UOP	No UOP	Total
<u>Any predictor present</u>	259	7818	8077	230	7733	7963
<u>No predictor present</u>	89	33764	33853	99	33867	33966
<u>Total</u>	348	41582	41930	329	41600	41929
	Derivation			Validation		
<u>Prediction rule sensitivity (95% CI)</u>	74% (70, 79)			70% (65, 75)		
Prediction rule specificity (95% CI)	81% (81, 82)			81% (81, 82)		
<u>Negative predictive value (95% CI)</u>	100% (100, 100)			100% (100, 100)		
Positive predictive value (95% CI)	3% (3, 4)			3% (3, 3)		
<u>Negative likelihood ratio (95% CI)</u>	0.31 (0.26, 0.38)			0.37 (0.31, 0.44)		

Conclusions



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The Team:



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Questions ?

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