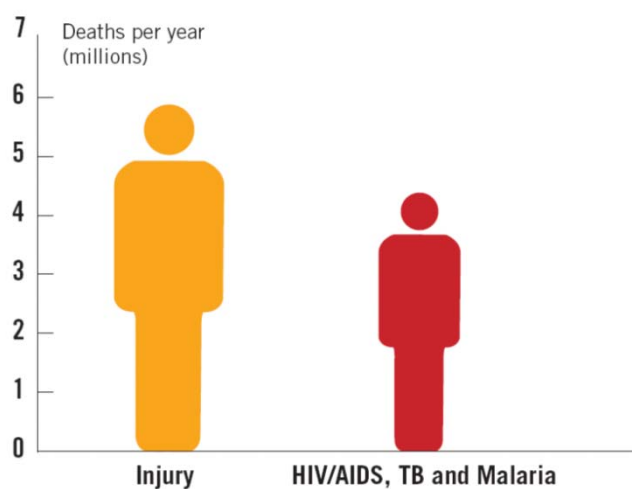


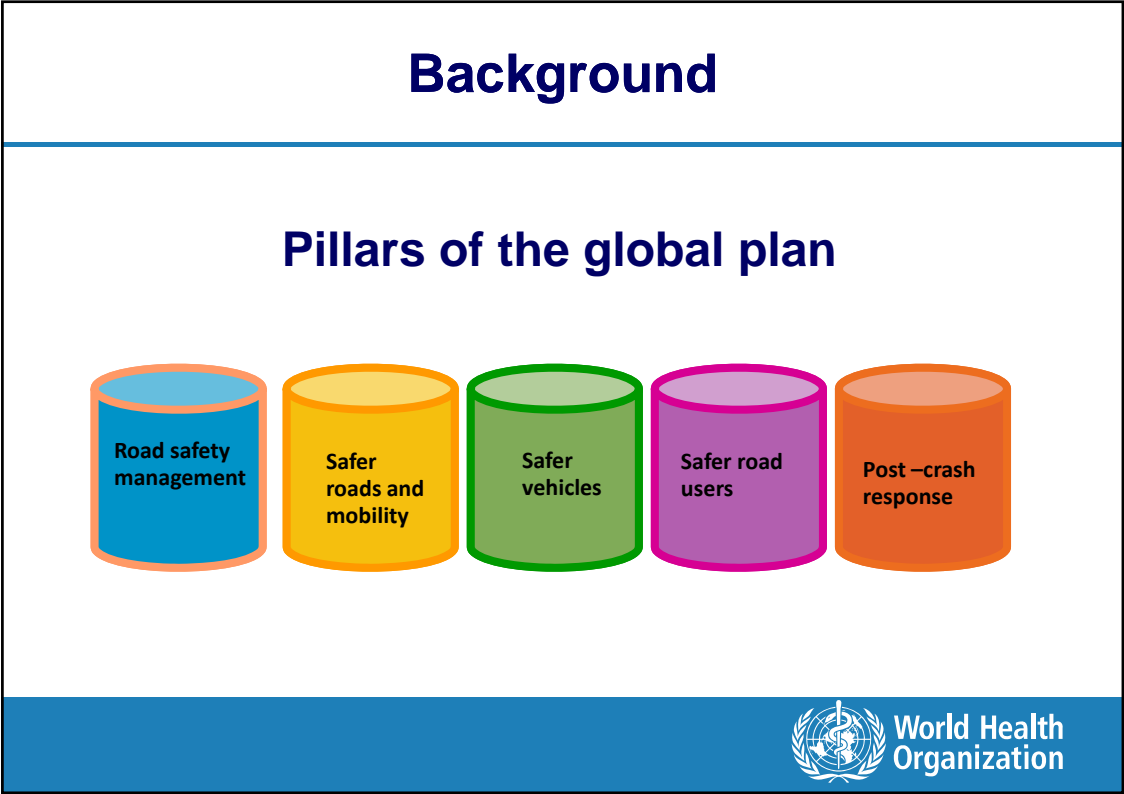
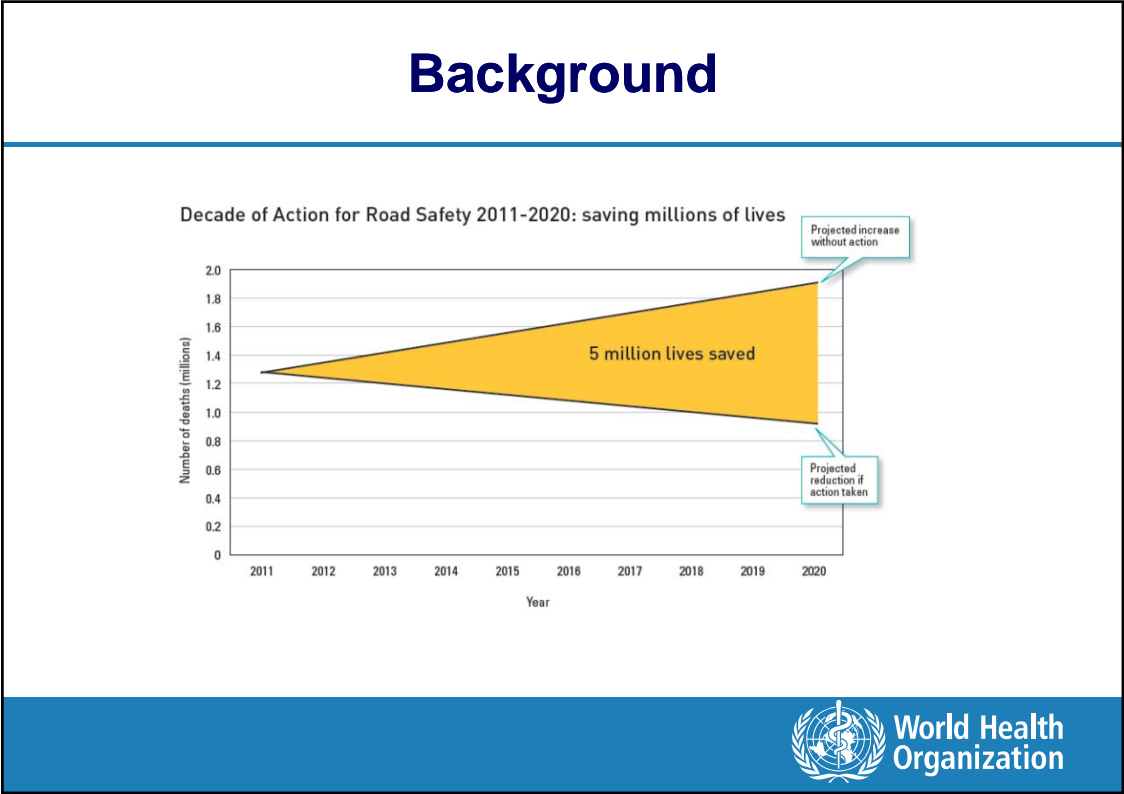
The WHO Trauma Care Checklist

Christina Huwer

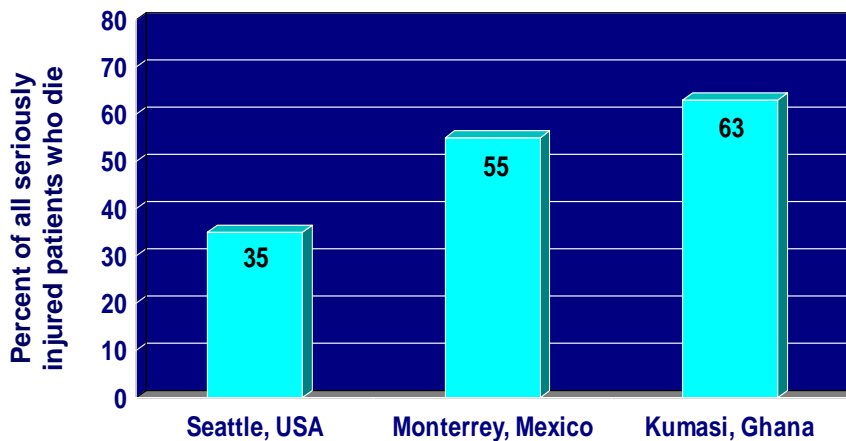


Background





Background



Source: World J Surgery, 2012



Background

	GNP Per capita	Health \$ Per capita
High income	\$40,000	\$5,000
Middle income	\$4,000	\$100 - 400
Low income	\$400	\$10



Background

DEFENCES:

- Physical barriers
- Improve Patient Safety Culture

Procedures

Training

Resident orders Overdose

The GAPS: Fear based/blame culture


No phone call to pharmacist to check dosage

Resident/pharmacist/nurse unaware of correct dose

Nurse overrides warning to retrieve medication


Nurse did not speak up during resuscitation

Patient Died harmed



World Health Organization

Background



World Health Organization

Background




Why a checklist?

“A checklist is a visual or oral aid that enables the user to overcome the limitations of short-term human memory.”

Federal Aviation Administration. Section 12: Aircraft Checklists for 14 CFR Parts 121/135, in FAA Order 8900.1 Flight Standards Information Management System (FSIMS). 2007

Surgical Safety Checklist



World Health Organization
Patient Safety
A World Alliance for Safer Health Care

Before induction of anaesthesia

(with at least nurse and anaesthetist)

Has the patient confirmed his/her identity, site, procedure, and consent?
 Yes

Is the site marked?
 Yes
 Not applicable

Is the anaesthesia machine and medication check complete?
 Yes

Is the pulse oximeter on the patient and functioning?
 Yes

Does the patient have a:

Known allergy?
 No
 Yes

Difficult airway or aspiration risk?
 No
 Yes, and equipment/assistance available

Risk of >500ml blood loss (7ml/kg in children)?
 No
 Yes, and two IVs/central access and fluids planned

Before skin incision

(with nurse, anaesthetist and surgeon)

Confirm all team members have introduced themselves by name and role.

Confirm the patient's name, procedure, and where the incision will be made.

Has antibiotic prophylaxis been given within the last 60 minutes?
 Yes
 Not applicable

Anticipated Critical Events

To Surgeon:
 What are the critical or non-routine steps?
 How long will the case take?
 What is the anticipated blood loss?

To Anaesthetist:
 Are there any patient-specific concerns?

To Nursing Team:
 Has sterility (including indicator results) been confirmed?
 Are there equipment issues or any concerns?

Is essential imaging displayed?
 Yes
 Not applicable

Before patient leaves operating room

(with nurse, anaesthetist and surgeon)


Nurse Verbally Confirms:

The name of the procedure
 Completion of instrument, sponge and needle counts
 Specimen labelling (read specimen labels aloud, including patient name)
 Whether there are any equipment problems to be addressed

To Surgeon, Anaesthetist and Nurse:

What are the key concerns for recovery and management of this patient?

This checklist is not intended to be comprehensive. Additions and modifications to fit local practice are encouraged. Revised 1 / 2009 © WHO, 2009



World Health Organization


Surgical Safety Checklist

Change in Death and Complications by Income Classification

Haynes et al.
A Surgical Safety Checklist to Reduce Morbidity and Mortality in a Global Population.
New England Journal of Medicine 360:491-9. (2009)

*** p<0.05**

	Change in Complications	Change in Death
High Income	10.3% -> 7.1%*	0.9% -> 0.6%
Low and Middle Income	11.7% -> 6.8%*	2.1% -> 1.0%*



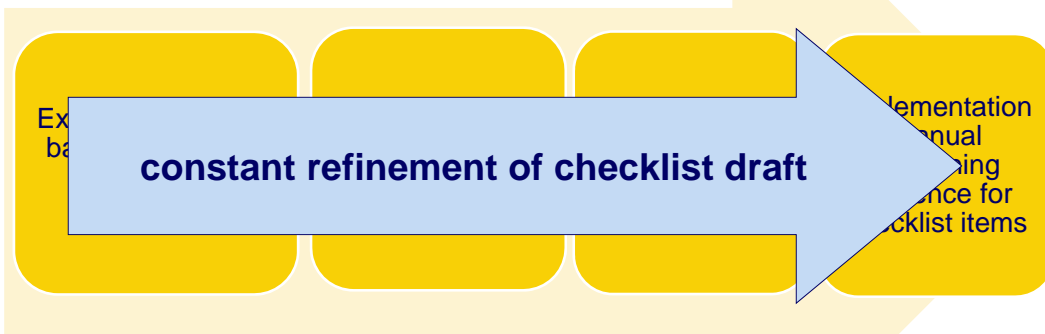
World Health Organization

Trauma Care Checklist

First draft developed at an international consultation during the Global Forum for Trauma Care in Rio de Janeiro, October 2009




Development



Draft—not for distribution

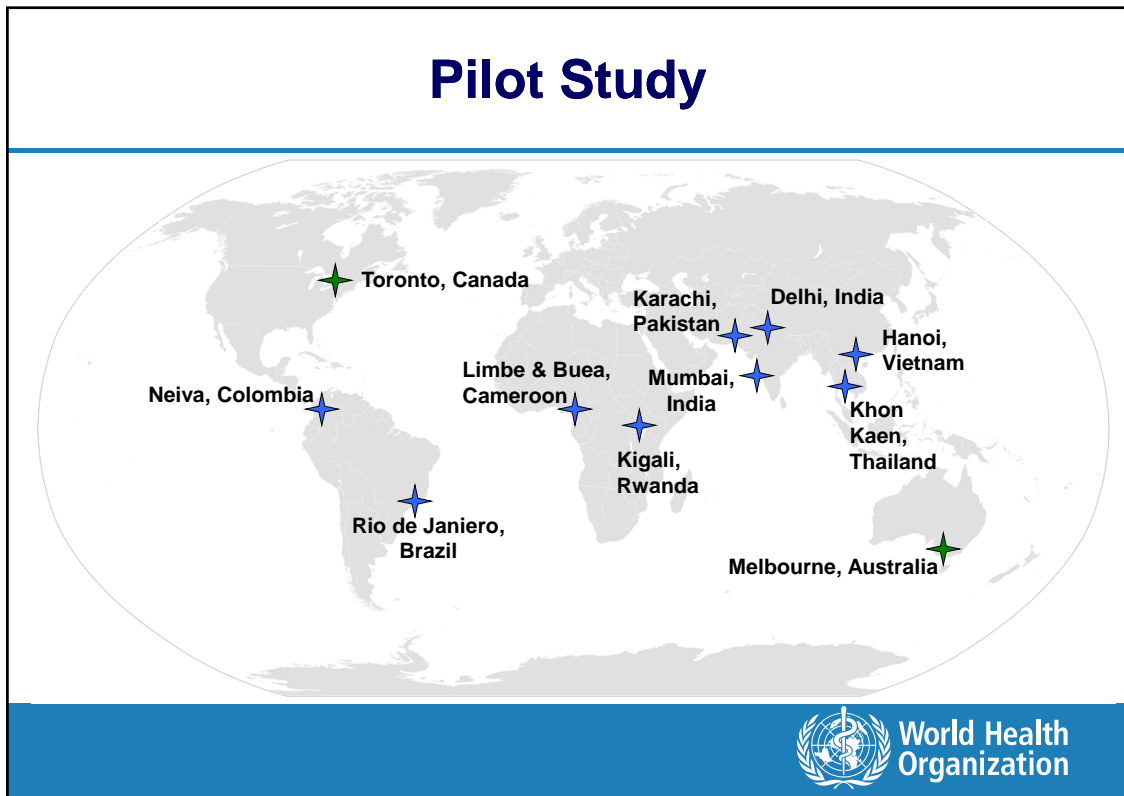
WHO Trauma Care Checklist



World Health Organization

After Patient has been assessed (history, primary and secondary survey)	Before Team leaves Patient
<p>Does the patient need further airway intervention?</p> <p><input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes: perform</p> <p><i>Further airway in</i></p> <ul style="list-style-type: none"> - GCS 8 or below - Hypoxaemia or Hyperoxaemia - Maxillofacial/laryngeal/neck trauma - Severe chest/overall injury 	<p>Have you checked for internal bleeding with:</p> <p><input type="checkbox"/> Physical examination <i>and</i></p>
<p>Does the patient need a chest tube?</p> <p><input type="checkbox"/> Yes, placed</p> <p><input type="checkbox"/> No, tension pneumo/haemothorax ruled out</p>	<p>Has the patient been given (if indicated)?</p> <p><input type="checkbox"/> Analgesics</p> <p><input type="checkbox"/> Immune globulin</p> <p><i>Deep, severe wounds, signs of contamination</i></p> <ul style="list-style-type: none"> - last vaccination >5 years ago or unknown - Tetanus immune globulin in addition if <3 previous vaccinations or unknown <p><input type="checkbox"/> Antibiotics</p> <p><i>Antibiotics if:</i></p> <ul style="list-style-type: none"> - Open fracture recommended by local protocol <p><input type="checkbox"/> Tranexamic acid</p> <p><i>Tranexamic acid if:</i></p>
<p>Does the patient have large bore IV AND have appropriate fluids been initiated?</p> <p><input type="checkbox"/> Yes</p>	<p>Have you reviewed all diagnostic test and imaging studies?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> Not yet, plan in place to follow/up</p>
<p>Have you checked all over for open wounds and controlled for external bleeding, including:</p>	<p>Does the patient need any of the following serial examinations ?</p> <p><input type="checkbox"/> Abdominal</p> <p><input type="checkbox"/> Neurological</p>
<p>Have you checked for Pelvic fracture with:</p> <p><input type="checkbox"/> Physical examination <i>and</i></p> <p><input type="checkbox"/> XRray or</p> <p><input type="checkbox"/> CT Scan</p>	<p>Have you discussed the further plan of care?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes, in</p> <p><input type="checkbox"/> Receiving Unit</p> <p><input type="checkbox"/> Family</p> <p><input type="checkbox"/> Additional Specialists</p>
<p>Have you checked for Pelvic fracture with:</p> <p><input type="checkbox"/> Physical examination <i>and</i></p> <p><input type="checkbox"/> XRray or</p> <p><input type="checkbox"/> CT Scan</p>	<p>Have you completed the Intake form?</p> <p><input type="checkbox"/> Yes</p>

Revision 54: September 26, 2012



Pilot Study

Checklist Implementation

Modeled the implementation program on the 4 E's:

1. Engage
2. Educate
3. Execute
4. Evaluate

Pronovost, P. J et al. BMJ 2008;337:a1714



Implementation

Engage staff

1. Explained the purpose of checklist
2. Local leadership encouraged to endorse use of checklist
3. Recommended giving local examples where using checklist might have helped prevent harm to patient or staff



Implementation

Educate staff

1. Present evidence behind use of checklists as means of decreasing error
2. General discussion with all staff around patient safety and medical errors
3. Feedback on baseline practices
4. Train staff how to use checklist, do simulations, continued support/oversight



Implementation

Execution

1. Local adaptation of checklist items and trial of modifications (may also contribute to local ownership)
2. Resource assessment by local multidisciplinary team to encourage important changes to flow/supplies that would facilitate checklist use



Local Adaptation

Alfred Hospital, Melbourne

Saint Michael's Hospital, Toronto



WHO TRAUMA CARE CHECKLIST	
Complete AFTER trauma history & physical exam with initial life saving measures (primary & secondary survey)	
Is the airway secure?	YES NO
Has a tension pneumo/hemothorax been ruled out or treated?	
Is a pulse oximeter on the patient and functioning?	
Have the appropriate fluids (crystalloid, blood) been initiated?	
Have you checked for pelvic fracture?	
Have you assessed for internal bleeding by:	
Clinical Exam Sufficient	
Ultrasound Scan/ Diagnostic Peritoneal Lavage/CT Scan	
Other	
Have you checked the neurovascular status of all 4 limbs?	
Have you determined if the patient's spine needs to be immobilized?	
Have you checked all over for open wounds and controlled external bleeding including:	
Scalp	
Back	
Perineum	
Have you assessed the need for a:	
Urinary catheter	
Nasogastric tube	
Large bore IV	
Chest tube	
Have you measured the patient's temperature?	
Have you assessed if the following are indicated:	
Tetanus vaccination	
Analgesics	
Antibiotics	
Have all diagnostic tests and imaging studies been reviewed?	
Are serial abdominal/neurologic/vascular examinations required?	
Have you discussed the treatment plan with:	
Trauma Team	
Other Specialists Unit	
Family	
Has the Multi-trauma Admission form been completed?	

WHO TRAUMA CARE CHECKLIST	
PRIOR TO ED DEPARTURE	ON ARRIVAL IN ICU
1. Is airway secure or do you anticipate further airway intervention? <input type="checkbox"/> Yes <input type="checkbox"/> No, and plan discussed with team 2. Is the patient's GCS 8 or below? <input type="checkbox"/> No <input type="checkbox"/> Yes, and patient is intubated 3. Has a CXR been reviewed and hemo/pneumothorax ruled out? <input type="checkbox"/> Yes 4. Is the pulse oximeter on the patient and functioning? <input type="checkbox"/> Yes 5. Has the pelvic X ray been reviewed to rule out a pelvic # and pelvic binder considered? <input type="checkbox"/> Yes <input type="checkbox"/> No (not indicated for penetrating trauma) 6. Has the appropriate fluids (crystalloids then blood) been initiated? <input type="checkbox"/> Yes 7. Has an arterial blood gas been performed? <input type="checkbox"/> Yes 8. Is the patient in shock (Base deficit \leq -6 or persistent tachycardia or hypotension)? <input type="checkbox"/> No <input type="checkbox"/> Yes If yes, has the surgeon been notified? <input type="checkbox"/> No <input type="checkbox"/> Yes Has blood been ordered and MTP considered? <input type="checkbox"/> No <input type="checkbox"/> Yes 9. Have you assessed for internal bleeding with: <input type="checkbox"/> Clinical exam (e.g. abd GSW) <input type="checkbox"/> FAST <input type="checkbox"/> DPL <input type="checkbox"/> CT scan done or pending 10. Have you checked for open wounds and controlled external bleeding including from the scalp, back & perineum? <input type="checkbox"/> Yes 11. Have you checked the neurovascular status of all 4 limbs? <input type="checkbox"/> Yes 12. Has the temperature been recorded and hypothermia excluded (T \leq 35)? <input type="checkbox"/> Yes, and action taken if needed 13. Have analgesics, antibiotics, and tetanus been considered? <input type="checkbox"/> Yes 14. Have the consultants stated their plan? <input type="checkbox"/> Anesthetist/RT: General Surgery <input type="checkbox"/> Orthopaedic Surgery <input type="checkbox"/> Neurosurgery (if notified) 15. Have the necessary agents been prepared for transport? <input type="checkbox"/> Narcotics <input type="checkbox"/> Anxiolytics <input type="checkbox"/> Paralytics 16. Does any member of the team have any issues or concerns that have not been addressed prior to departure from the trauma room?	1. Have all diagnostic tests and imaging studies been reviewed? <input type="checkbox"/> Yes <input type="checkbox"/> No, not yet available but plan in place for follow up 2. Is there additional imaging required? <input type="checkbox"/> Yes, order for imaging written in chart and communicated to receiving unit <input type="checkbox"/> No 3. Has the appropriate imaging of the C, T and L spines been completed? <input type="checkbox"/> Yes <input type="checkbox"/> No, plan made for imaging <input type="checkbox"/> Not indicated 4. Has an ABG been done? <input type="checkbox"/> Yes 5. Has the family been updated/ been able to see the patient? <input type="checkbox"/> Yes <input type="checkbox"/> No, plan in place to update family and/ or allow the family time to see the patient 6. Have the appropriate consulting services been contacted? <input type="checkbox"/> Yes <input type="checkbox"/> No 7. Does the Resuscitation Protocol for patients with Major Trauma need to be initiated in the TNCU? <input type="checkbox"/> Yes <input type="checkbox"/> No, criteria not met



Implementation

Evaluation

1. Regular evaluation, feedback, coaching
2. Identify barriers to checklist use and correct in real-time
3. Verify if checklist being used



Preliminary Results

Bivariate Analysis for Key Process Measures		
Process Measure	Observed (%)	
	Before (n=1810)	After (n=1258)
Surgical Airway	9%	16%
Endotracheal tube tied	9%	16%
Pulse oximetry	47%	73%
C-spine examined	39%	68%
C-spine X-ray	39%	68%
Motor exam all 4 limbs	68%	89%
Sensory exam all 4 limbs	55%	73%
Pulse exam all 4 limbs	59%	81%
Pelvic Physical Exam	60%	84%
Pelvic X-ray	39%	56%
Asked History of Tetanus	42%	64%
Gave Tetanus Vaccination	42%	64%
Temperature Taken	47%	75%
Clothing removed	47%	68%
Scalp examined	66%	84%
Perinium examined	18%	42%
Analgesics given	69%	88%
Antibiotics given	47%	83%

Bold=p<0.05



Preliminary Results

Bivariate Analysis for Key Communication Process Measures		
Process Measure	Observed (%)	
	Before (n=1810)	After (n=1258)
Discussed plan with ER team	75	89
Discussed plan with unit/floor	61	85
Discussed plan with family	55	84
Discussed plan with specialist	62	88

Bold=p<0.05



Preliminary Results

Change in Chest Tube Placement: (Patients with Pneumo- or Hemothorax)

50.0% Chest tubes pre-checklist

76.6% Chest tubes post-checklist

P=0.008



Preliminary Results

Change in Intubation Practice: (Patients with GCS<8)

63.9% intubated pre-checklist

76.3% intubated post-checklist

P=0.008



Launch

Expected 2013

Checklist and Manual will be available on

www.WHO.int



Thank you!

