Initiation of a medical toxicology consult service at a tertiary care hospital

Professor Miguel Marcelo Glatstein
Staff physician
Dana-Dwek Children’s Hospital. Pediatric Emergency Medicine. Clinical Toxicology service. Tel Aviv Sourasky Medical Center.
Introduction

Medical toxicology is a medical subspeciality focusing on the diagnosis, management, and prevention of:

1. Poisoning and other adverse health effects due to medications.
2. Drug overdose.
4. Chemical exposures.
5. Occupational and environmental toxins.
7. Envenomations.
Introduction

Training of health care professionals in toxicology has lagged behind that of other disciplines around the world.

Medical Toxicology has been recognized as a subspecialty by the American Board of Medical Specialties (ABMS) since 1992.
Medical toxicology has emerged as an important fellowship program, with many medical toxicologists completing a prior residency program in emergency medicine.

Fellowship program grew from 21 in 1997 to 28 in 2016.
Israel:

- A small country (22072 km²)
- Eastern shore of the Mediterranean Sea
- Population - about 8.1 million
More than 90% of the inhabitants live in urban settlements

The country’s 28 hospitals report a total of approximately 2.8 million ED visits annually

600,000 (25%) are children aged 0-14 years.

Poisoning typically represent 1-3 % of all emergency departments visit.
Toxicology fellowship in Israel

- Interestingly, this subspecialty is not widely available in Israel.

- There are a limited number of toxicologists and toxicology institutions available for consultation.

- Therefore, when in-hospital toxicology consultation is required in the setting of suspected poisoning, it is directed to poison centers by phone instead of toxicology specialists.
Sourasky Medical Center

- Our hospital is a high volume city tertiary care hospital.

- It has 600 hospital beds; over 18,000 admissions include pediatric and adult population.
In collaboration with our tertiary care center, an Israeli-certified pediatric emergency physician was sent to complete an International fellowship program at the Rocky Mountain Poison Center in Denver, Colorado.
Fellowship in clinical toxicology

International fellowship program:

1. Participate in bedside toxicology consults to evaluate critically ill patients with American Board certified clinical toxicology.

2. Interactive white board discussions.
Human studies

**Curry et al, J Medic Toxicol 2015**

- Effect of a Medical Toxicology Admitting Service-care of patients.
- Differences between observed and expected:
  1. Lengths of stay.
  2. Cost.
In September 2017, a medical toxicology consultation service was established in our hospital, with focus on bedside consultations that were not available previously.

Such service can facilitate:
1. Faster and more accurate diagnosis.
3. Follow up consultations.
4. Avoid unnecessary tests and treatments.
5. Teaching
The aim of this study is to describe:
1. The implementation of a bedside toxicology service including the structure and organization of the service.
2. The spectrum of clinical cases received.
3. The barriers to implementation.
4. Benefits and future goals of the service.
STUDY DESIGN: A retrospective observational cohort study.

SETTING: Sourasky medical center (adults and Pediatrics Patients)

STUDY POPULATION: All toxicology service consults between August 2017 to September 2018 including pediatric and adult patients.

Service provided 24 hours a day, for 7 days a week by phone and unless emergent consultation (included overnight).
### Results

<table>
<thead>
<tr>
<th></th>
<th>Patients (n= 292)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean age (SD), years</strong></td>
<td>30 (21)</td>
</tr>
<tr>
<td><strong>Median age, years</strong></td>
<td>26</td>
</tr>
<tr>
<td><strong>Age range, years</strong></td>
<td>0.1-90</td>
</tr>
<tr>
<td><strong>Female gender, n (%)</strong></td>
<td>150 (51%)</td>
</tr>
<tr>
<td><strong>Department requiring consultation</strong></td>
<td></td>
</tr>
<tr>
<td>ED</td>
<td>126</td>
</tr>
<tr>
<td>PED</td>
<td>48</td>
</tr>
<tr>
<td>Internal medicine ward</td>
<td>26</td>
</tr>
<tr>
<td>Pediatric ward</td>
<td>7</td>
</tr>
<tr>
<td>ICU adults</td>
<td>16</td>
</tr>
<tr>
<td>ICU PED</td>
<td>1</td>
</tr>
<tr>
<td>Other hospital</td>
<td>1</td>
</tr>
<tr>
<td><strong>Toxic type</strong></td>
<td></td>
</tr>
<tr>
<td>Analgesics and anti-inflammatory</td>
<td>46</td>
</tr>
<tr>
<td>Polypharmacy</td>
<td>35</td>
</tr>
<tr>
<td>Drugs abuse</td>
<td>31</td>
</tr>
<tr>
<td>Others drugs</td>
<td>28</td>
</tr>
<tr>
<td>Caustics</td>
<td>27</td>
</tr>
<tr>
<td>Sedative hypnotics</td>
<td>26</td>
</tr>
<tr>
<td>Envenomation</td>
<td>18</td>
</tr>
<tr>
<td>Antipsychotics</td>
<td>17</td>
</tr>
<tr>
<td>Antidepressant</td>
<td>12</td>
</tr>
<tr>
<td>Antihypertensive</td>
<td>11</td>
</tr>
<tr>
<td>Opioids</td>
<td>8</td>
</tr>
<tr>
<td>Antidiabetics</td>
<td>7</td>
</tr>
<tr>
<td>toxic gas</td>
<td>6</td>
</tr>
<tr>
<td>Antiseizures</td>
<td>5</td>
</tr>
<tr>
<td>Iron overdose</td>
<td>3</td>
</tr>
</tbody>
</table>
Results (292 cases): 204 adults and 87 pediatric cases
Volume of consultation

Initial calls

Consultation location

Bedside 76%
Phone 24%
Bedside Phone consultation

ED
Pediatric ward
Other hosp
PED
ICU adults
Adults ward
ICU PED
Interesting cases

TCA overdose

Alcohol Withdrawal
Interesting cases

Snake envenomation

EMLA intoxication
Interesting cases

adfadfadsfasdf.mp4

IMG_8203.MP4
Interesting cases
Medical toxicology-Academic

- Interactive white board discussions.
1. Pediatrics and Adults emergency medicine.
2. Adults and Pediatrics intensive care.
3. Pediatrics and Adults wards.
4. At least teaching one per week.
- Published papers.
Barriers of implementation

- Many physicians are more inclined to make decisions independently based on resources such as Up-to-date and are hesitant to consult the toxicology.
- Low financial compensation for toxicology physician.

Clinical Toxicology requires passion
Medical toxicology is a medical subspecialty.

Training health's professionals in toxicology is mandatory.

Bedside toxicology is a very important to maintain clinical competence and ensure respect and recognition from colleagues.
Clinical toxicology requires passion, critical thinking about complex cases and a strong understanding of the pathophysiology behind toxicology and the therapeutic implications.

As seen based on this study, toxicologists see a wide range of patients and clinical scenarios and must therefore have strong critical thinking skills.
Limitation

Descriptive retrospective study therefore no comparisons to others hospitals lacking toxicology physicians have.

This study include toxicology patients for which consults was requested and no toxicology patients without consult and no reflective of the true toxicology patient population.
References

- Goldfrank’s Toxicologic Emergencies 7th ed. 2002 McGraw Hill

http://meds.queensu.ca/medicine/emergency/staff/sivilotti/antidotes.htm

Specific questions? nopasara73@hotmail.com

60724
Xenobiotics that can contribute to serotonin syndrome

- Increase serotonin synthesis.
  L-tryptophan

- Increased serotonin release.
  Amphetamines, Cocaine, Dextromethorphan, Reserpine

- Decrease serotonin uptake.
  SSRI, SNRIs, TCA, Tramadol, Cathinones.

- Decreased serotonin metabolism.
  MAO-I, Linezolid, Ritonavir.

- Serotonin agonists.
  Triptans, Ergotamines, LSD, Ondansentron.