

## Supplemental Table 4: E-PROSPECT Costing Manual

E-PROSPECT: The economic evaluation of PROSPECT (Probiotics: Prevention of Severe Pneumonia and Endotracheal Colonization Trial)

### Operations Manual

Costing Methodology and Definitions

### Data Collection

*Clinical Outcomes:* Clinical data on every patient will be collected as part of PROSPECT. Site coordinators have already participated in the main clinical randomized controlled trial (RCT), and undergone intensive training session to review the methods and case report forms (CRFs) of the main trial. The Methods Centre at McMaster University will manage PROSPECT data, providing patient characteristics, tests, treatments, and outcomes (e.g., infections, adverse events, duration of stay in ICU and hospital, and mortality in ICU and hospital). We will obtain variable names from the Methods Centre at McMaster to associate them with costs.

*Resource utilization:* To determine the incremental cost of patients receiving probiotics compared to placebo (with usual care), the resources consumed by patients in PROSPECT will be collected. Enrolled patients are in the intensive care unit (ICU), and are randomized to receive probiotics or placebo, with daily follow-up to identify relevant outcomes. In determining incremental costs, only resources which differ between the two treatment groups need to be identified. However, because the resources that will differ are uncertain, the economic evaluation will be conducted alongside to the RCT as a sub-study, with all important resources being ascertained and analyzed. Once resources are identified, resource utilization and the unit costs of each item for each given patient needs to be calculated.

For purposes of a health economic evaluation, resources will be translated into monetary values. Resource utilization variables associated with the direct medical costs of critically ill patients include: (1) medications; (2) laboratory testing; (3) personnel; (4) radiology testing; (5) procedures/surgeries, and (6) complications/adverse clinical outcomes. Overhead costs include: (1) ICU costs and (2) ward costs. A comprehensive list of direct medical resource utilization elements associated with critically ill patients will be identified. Previous studies (Fowler et al. - Pilot) discovered that public and private-funded institutions have considerable variability in patient costing, and that line-by-line item costs are not available routinely. Many summary cost measures tend to “roll-up” individual items costs rather than listing them as unit costs, which would not allow for a linkage of costs and clinical events (the later measured as part of the PROSPECT CRFs).

This previously established cost-gathering methodology (Fowler et al. – Pilot) captures hospitalspecific line item costs, according to important variables that we anticipate will drive costs and possible cost-effectiveness. These “big ticket items” are determined by: (1) a systematic review (SR) of probiotics economic evaluations for preventing healthcare-associated infections (ventilator-associated pneumonia, *Clostridioides difficile*-associated diarrhea, antibiotic-associated diarrhea) in hospitalized

patients (Lau 2019), (2) the PROSPECT CRFs, and (3) experts in healthcare-associated infections in the ICU. If additional costing and utilization information cannot be gleaned from these sources, then certain methodological assumptions (Table 4) will be made regarding resource utilization for potential routine utilization for specific diagnoses/complications.

Further to this, we will be conducting a pilot phase of unit cost acquisition at a sampling of sites to determine which unit costs can be feasibly obtained. It is possible that the pilot phase of this work may inform changes to this protocol, as well as the analysis of the economic evaluation. For example, if a unit cost for a particular line-item is deemed to be small and not a major driver of costs, then that line-item may be removed from the final analysis. The same would apply if a specific line-item has a low clinical incidence rate or no difference in clinical outcome/resource utilization between intervention and control groups, as little to no incremental difference in costs would exist between the two arms. Once the list of line-items has been pared down to those which are deemed to be major cost drivers, clinically relevant, but also feasible to obtain, this new line-item list will be surveyed across all sites.

Unit costs will be obtained from various sources including: (1) departments within participating hospitals, (2) provincial/state/country source databases. Costs conversion will involve collecting costs in their natural currency units from the participating center, and then converting to American dollars in the year of publication (2020). Discounting will not be applied for short-term (<1 year) time-horizon events.

#### *Unit Costs*

A unit cost differs from a charge:

- Costs are the expenses incurred by the hospital for the service/procedure rendered.
- Charge is the amount that hospital requires drug companies/researchers to pay for a service/procedure to be conducted at their hospital. A charge usually consists of the cost of performing the service/procedure plus a mark-up fee.
- Hospitals may have a charge-to-cost conversion for unit costs – which we will try to obtain.

Unit costs will be obtained by several methods:

#### 1) Hospital budgets

Ideally, all costs would reflect expenses in the hospital budget. This information will be obtained from hospital financial departments if available. However, in most cases, unit costs are not available for reasons such as: item costs are presented in bulk quantity costs, or item costs are several years outdated, or prices cannot be disclosed due to agreement with suppliers.

#### 2) Government reimbursement

If hospital budget costs are not available, costs will be obtained from government sources/databases. In public healthcare systems, the country's government is mostly accountable for reimbursements of services rendered. We will obtain unit costs from a government schedule of benefits, which delineate the reimbursement for each procedure or test by laboratories, hospitals and healthcare professionals. If the schedule of fees is unavailable or have restricted access, the information will be collected through contact with medical professionals (i.e. pharmacist, ICU manager, etc.) from PROSPECT-associated hospitals. In jurisdictions in which there is a mix of both private and public healthcare (i.e. US), the total private health

care fee (i.e. Medicare Benefits Schedule Book) or equivalent government medical benefits schedule may be used.

### 3) Charge to Cost Ratios

If costs cannot be acquired, the amount that a hospital charges for a procedure, either to patients or to investigators for clinical trials will be used where cost-to-charge ratios are available. We will use cost:charge ratios that relate to individual costs, as opposed to “rolled-up” ratios, as much as possible.

### General Costing Procedures

The PROSPECT site investigators list (maintained by the McMaster Methods Centre) will be used to identify who to initially contact for costing information. An introductory e-mail will be sent to select site investigators (and to the research coordinator, if known) to inform them of E-PROSPECT and to request their assistance to obtain costing information from their site during the pilot phase of unit cost acquisition. If there is no response by the PROSPECT site investigators, individuals will be contacted 2 more times via telephone, email. If there is still no response, or if the site investigators decline to participate, the site’s unit costs will be excluded from analysis. Once pilot phase testing is completed, the new line-item unit cost list will be sent to all sites for the remaining unit costs which could not be acquired from public databases.

The general procedure for initiating the costing exercise at each hospital will be as follows:

1. We will contact the PROSPECT site investigator and research coordinator to identify the most appropriate person to identify the requested costs.
2. We will contact these individuals, inform them of E-PROSPECT, and request the hospital-related costs. In some cases, PROSPECT site investigators may prefer to contact these individuals themselves. The e-mail (below) will be sent to contacts.
3. For each cost item, we will ask about the relevant person at the hospital who is most responsible for knowing/determining the hospital-specific cost (e.g. radiology, pharmacy, ICU personnel) will be contacted.
4. We will ask if a hospital specific cost exists for each variable.
5. We will determine if the cost is an actual cost, or “charge”. If the item is a charge, a hospital line-item specific cost-to-charge ratio will be required.
6. If the cost is generalizable to a broader geography (health region laboratory cost, provincial physician reimbursement rate, etc.), then we will obtain these costs from the investigators and compare these to the hospital specific costs. Significant discrepancies will be further interrogated to determine whether the difference is real, and which best approximates actual cost (vs. charge). Notations will be made on the dataset and used for future decisions about which numbers to apply to the eventual economic analyses. The list of study variables, definitions, and documentation examples for sources of variable values is below.

Sample Communication to Identified Individuals at E-PROSPECT Sites

Dear colleague,

I am helping with the economic evaluation of the PROSPECT study (E-PROSPECT). We are in the process of gathering costing data on key variables and suspected drivers of cost from all sites involved in PROSPECT (in Canada, the US, and Saudi Arabia). The site principal investigator(s)/research coordinator(s) has passed on your contact information as an individual who could hopefully assist us with **unit cost** collection for E-PROSPECT.

Our goal primarily is:

**To collect unit costs for specific items in PROSPECT, NOT for any patient-specific data.**

We are looking for the unit costs to be listed in your local currency for this year (2019).

A unit cost is defined as:

A **unit cost** is the **expenditure/cost** spent on **one unit** of a particular medication, diagnostic test, investigation, procedure, surgery or personnel in health care.

For example:

- For a specific antibiotic (i.e. ceftriaxone), we are looking for the unit cost for this medication
  - o The specific cost (unit cost) at the particular dose (1 unit) that your institution pays for the medication (i.e. Ceftriaxone: \$50.00 CDN per 1 gram of medication)
- For a specific diagnostic test (i.e. echocardiogram), we are looking for the unit cost per 1 test (i.e. transthoracic echocardiogram: \$119.00 CDN per 1 echocardiogram)
- For a specific personnel (i.e. nurse), we are looking for the per diem (day) cost for that staff member (i.e. Nurse: \$200.00 CDN per day)
- For overhead cost, we are looking for the per diem (day) cost for 1 day stay in the ICU and 1 day stay on the ward
  - o *We request the per diem day cost broken down into its component parts (i.e. personnel, devices, etc.), as we will need to ensure that we do not double-count the cost of items*
- *Attached to this costing manual (and also in the data extraction spreadsheet) are key variables we are hoping to obtain from your site*
- *If either yourself, or someone else at your center is able to put us in touch with someone to contact at your site, that would be greatly appreciated.*
- *Sometimes there is a costing person attached to ICU or a costing/charging department. Sometimes we have found it necessary to track down someone in radiology, pharmacy, ICU, lab services, etc. Could you please put us on the right track with names/emails or by forwarding this request? - We would like to include your names in the publications arising from this work.*

Thanks very much for your help and continued support of PROSPECT.

Sincerely,

Dr. Vincent Lau, MD, FRCPC, McMaster HRM MSc(c)

Supervised by: Drs. Deborah J. Cook, Bram Rochweg, Feng Xie, Jennie Johnstone and Rob Fowler E-PROSPECT COST LIST

Pharmacy Costs - Just Tell us Who to Contact:   
probiotics (*Lactobacillus rhamnosus* GG)

- antibiotics:
  - piperacillin-tazobactam
  - ceftriaxone
  - ceftazidime
  - azithromycin
  - vancomycin
  - metronidazole
  - levofloxacin
  - imipenem
  - meropenem
  - amoxicillin-clavulin
    - cefuroxime
    - linezolid
    - cefazolin
    - cloxacillin
    - ciprofloxacin
    - gentamicin
    - trimethoprim-sulfamethoxazole
- steroids
  - dexamethasone
  - methylprednisone
  - hydrocortisone
  - prednisone
- stress ulcer prophylaxis
  - cimetidine
  - ranitidine
  - famotidine
  - nizatidine
  - lansoprazole
  - dexlansoprazole
  - pantoprazole
  - esomeprazole
  - omeprazole
  - rabeprazole
- laxatives/motility agents
  - domperidone
  - metoclopramide
  - erythromycin
  - senna
  - dulcolax
  - golytely
  - glycerin
  - lactulose
  - colace
  - citro-mag
  - PegLyte
  - pancreatic enzymes
  - enema
- opiates
  - morphine
  - hydromorphone
  - demerol
  - fentanyl
  - oxycodone
  - percocets

Clinical Laboratory Costs - Just Tell us Who to Contact:

- complete blood count
- creatinine
- arterial blood gas
- lactate
- albumin
- blood cultures
- urine cultures
- sputum/tracheal aspirate/bronchoalveolar lavage cultures
- *C. difficile* polymerase chain reaction (PCR), toxin assays, ELISA, cell culture, LAMP
- other aerobic/anaerobic cultures
  - thoracentesis
  - paracentesis

General ICU and Ward Costs/Personnel - Just Tell us Who to Contact:

- most responsible physician
  - ICU
  - Hospital
- consultation physicians (general surgery, thoracic surgery, gastroenterology, infectious disease specialists, respiratory)
- nurse

- pharmacist
- respiratory therapist
- physical therapist
- social worker
- ICU clerk
- ICU days (generic cost)
- ward days (generic cost)

Radiology Costs - Just Tell us Who to Contact:

- portable chest radiograph
- portable abdominal radiograph
- computerized tomography (CT) scan: chest, abdomen, pelvis, sinusitis, head
- MRI: head, chest, joint
- abdominal ultrasound

Procedural Costs - Just Tell us Who to Contact:

- central venous catheter, peripherally inserted central catheter, arterial lines
- chest tube
- naso- or oro-gastric tube
- percutaneous endoscopic gastrostomy (PEG) tube
- tube feed
- fiber
- protein supplement
- ventilator circuit changes
- endotracheal tubes (with or without subglottic suction)
- invasive ventilation (ventilator days) ◦ heat moisture exchange ◦ heated humidifier
- non-invasive positive pressure ventilation
- high-flow nasal cannula
- vasopressor/inotropic agents
- VAP prevention bundles ◦ chlorhexidine usage ◦ bacterial filters ◦ oral decontamination ◦ gut decontamination ◦ oral antibiotic paste
- colonoscopy (cautery, epinephrine injection)
- echocardiograms (transthoracic/transesophageal)
- bronchoscopy
- thoracostomy
- tracheostomy
- interventional radiology drain
- intermittent hemodialysis
- peritoneal dialysis
- continuous renal replacement therapy
- fecal management device

Cost reimbursed by the governing authority to the primary physician for procedure that is rendered at a hospital. Costs often include a Professional component, and a Technical component.

The *professional component* consists of:

- A. Providing clinical supervision, including approving, modifying and/or intervening in the performance of the procedure where appropriate, and quality control of all elements of the technical component of the procedure.
- B. Performance of any clinical procedure associated with the diagnostic procedure which is not separately billable (e.g. injections which are an integral part of the study) and of any fluoroscopy.
- C. Where appropriate, post-procedure monitoring, including intervening except where this constitutes a separately billable service.
- D. Interpreting the results of the diagnostic procedure.
- E. Providing premises for any aspect(s) of A and D that is(are) performed at a place other than the place in which the procedure is performed.

The *technical component* consists of:

- A. Preparing the patient for the procedure.
- B. Performing the diagnostic procedure or assisting in the performance of fluoroscopy.
- C. Making arrangements for any appropriate follow-up care.
- D. Providing records of the results of the procedure to the interpreting physician.
- E. Discussion with, and providing information and advice to, the patient or patient's representative(s), whether by telephone or otherwise, on matters related to the service.
- F. Preparing and transmitting a written, signed and dated interpretive report of the procedure to the referring physician.
- G. Providing premises, equipment, supplies and personnel for all specific elements of the technical and professional components except for the premises for any aspect(s) of A and D of the professional component that is(are) not performed at the place in which the procedure is performed.

Operative Costs - Just Tell us Who to Contact:

- laparotomy (toxic megacolon, bowel perforation)
- colectomy
- thoracotomy
- open abdominal wound (vacuum-assisted closure (VAC) devices)
- surgeon
- surgical assistant
- anesthesiology
- nursing

Definition of Variables, Source Documentation for Values

NOTE THAT DEFINITIONS MAY DIFFER ACROSS JURISDICTIONS. PLEASE USE THE DEFINITIONS AS A GUIDELINE.

### Drug costs

Unit cost to be paid by the hospital to the drug company as negotiated between the hospital and the drug company. The cost is usually found in the hospital drug formulary, or is known to the hospital pharmacy contact.

#### Resource Utilization and Unit Costs

Variable	Definition	Unit for costing determination (dose and route)	Unit cost	Source	Captured in PROSPECT CRF
Study-related drugs					
<input type="checkbox"/> probiotics ( <i>Lactobacillus rhamnosus GG</i> )	Live microorganisms which when administered in adequate amounts confer a health benefit on the host	1× 10 <sup>10</sup> colony forming units (cfu)		iHealth/pharmacy contact (name, date)	Form 4.1 and 5
Antibiotics:					
<input type="checkbox"/> piperacillin/tazobactam	Amino-penicillin antibiotic			E.g. hospital formulary pharmacy contact (name, date)	Form 7.1
<input type="checkbox"/> ceftriaxone	Third-generation cephalosporin antibiotic			E.g. hospital formulary pharmacy contact (name, date)	Form 7.1
<input type="checkbox"/> ceftazidime	Third-generation cephalosporin antibiotic			E.g. hospital formulary pharmacy contact (name, date)	Form 7.1
<input type="checkbox"/> azithromycin	Macrolide antibiotic			E.g. hospital formulary pharmacy contact (name, date)	Form 7.1
<input type="checkbox"/> vancomycin	Glycopeptide antibiotic			E.g. hospital formulary pharmacy contact (name, date)	Form 7.1
<input type="checkbox"/> metronidazole	Nitroimidazole antibiotic			E.g. hospital formulary pharmacy contact (name, date)	Form 7.1
<input type="checkbox"/> levofloxacin	Fluoroquinolone antibiotic			E.g. hospital formulary pharmacy contact (name, date)	Form 7.1
<input type="checkbox"/> imipenem	Carbapenem antibiotic			E.g. hospital formulary pharmacy contact (name, date)	Form 7.1
<input type="checkbox"/> meropenem	Carbapenem antibiotic			E.g. hospital formulary pharmacy contact (name, date)	Form 7.1
<input type="checkbox"/> amoxicillin/clavulin	Amino-penicillin antibiotic			E.g. hospital formulary pharmacy contact (name, date)	Form 7.1
<input type="checkbox"/> cefuroxime	Second-generation cephalosporin antibiotic			E.g. hospital formulary pharmacy contact (name, date)	Form 7.1
<input type="checkbox"/> linezolid	Oxazolidinones			E.g. hospital formulary pharmacy contact (name, date)	Form 7.1
<input type="checkbox"/> cefazolin	First-generation cephalosporin antibiotic			E.g. hospital formulary pharmacy contact (name, date)	Form 7.1
<input type="checkbox"/> cloxacillin	Amino-penicillin antibiotic			E.g. hospital formulary pharmacy contact (name, date)	Form 7.1
<input type="checkbox"/> ciprofloxacin	Fluoroquinolone antibiotic			E.g. hospital formulary pharmacy contact (name, date)	Form 7.1



<input type="checkbox"/>	gentamicin	Aminoglycoside antibiotic			E.g. hospital formulary pharmacy contact (name, date)	Form 7.1
<input type="checkbox"/>	trimethoprim-sulfamethoxazole	Dihydrofolate reductase inhibitor/sulfonamide antibiotic			E.g. hospital formulary pharmacy contact (name, date)	Form 7.1
Steroids:						
<input type="checkbox"/>	dexamethasone	Glucocorticoid steroid			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
<input type="checkbox"/>	methylprednisone	Glucocorticoid/mineralocorticoid steroid			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
<input type="checkbox"/>	hydrocortisone	Glucocorticoid/mineralocorticoid steroid			E.g. hospital formulary pharmacy contact	Form 4.2

					(name, date)	
<input type="checkbox"/>	prednisone	Glucocorticoid/mineralocorticoid steroid			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
Stress ulcer prophylaxis:						
<input type="checkbox"/>	cimetidine	Histamine H2 receptor blocker gastric acid suppressor			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
<input type="checkbox"/>	ranitidine	Histamine H2 receptor blocker gastric acid suppressor			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
<input type="checkbox"/>	famotidine	Histamine H2 receptor blocker gastric acid suppressor			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
<input type="checkbox"/>	nizatidine	Histamine H2 receptor blocker gastric acid suppressor			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
<input type="checkbox"/>	lansoprazole	Proton pump inhibitor antacid gastric acid suppressor			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
<input type="checkbox"/>	dexlansoprazole	Proton pump inhibitor gastric acid suppressor			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
<input type="checkbox"/>	pantoprazole	Proton pump inhibitor gastric acid suppressor			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
<input type="checkbox"/>	esomeprazole	Proton pump inhibitor gastric acid suppressor			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
<input type="checkbox"/>	omeprazole	Proton pump inhibitor gastric acid suppressor			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
<input type="checkbox"/>	rabeprazole	Proton pump inhibitor gastric acid suppressor			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
Laxatives/motility agents						
<input type="checkbox"/>	domperidone	Anti-dopamine (D2) receptor blocker anti-emetic			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
<input type="checkbox"/>	metoclopramide	Anti-dopamine (D2) receptor blocker anti-emetic			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2

<input type="checkbox"/>	erythromycin	Macrolide antibiotic/Motilin receptor agonist (increased gut motility)			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
<input type="checkbox"/>	senna	Laxative			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
<input type="checkbox"/>	dulcolax	Laxative			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
<input type="checkbox"/>	golytely	Laxative			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
<input type="checkbox"/>	glycerin	Laxative			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
<input type="checkbox"/>	lactulose	Laxative			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
<input type="checkbox"/>	colace	Laxative			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
<input type="checkbox"/>	citro-mag	Laxative			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
<input type="checkbox"/>	PegLyte	Laxative			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
<input type="checkbox"/>	pancreatic	Laxative			E.g. hospital formulary	Form 4.2

	enzymes				pharmacy contact (name, date)	
<input type="checkbox"/>	enema	Colonic irrigation			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
	Opiates					
<input type="checkbox"/>	morphine	Mu-receptor opiate			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
<input type="checkbox"/>	hydromorphone	Mu-receptor opiate			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
<input type="checkbox"/>	demerol	Synthetic opiate (phenylpiperidine)			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
<input type="checkbox"/>	fentanyl	Synthetic opiate			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
<input type="checkbox"/>	oxycodone	Synthetic opiate			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
<input type="checkbox"/>	percocets	Synthetic opiate			E.g. hospital formulary pharmacy contact (name, date)	Form 4.2
	Laboratory testing					
<input type="checkbox"/>	complete blood count	A complete blood count gives important information about the kinds and numbers of cells in the blood, especially red blood cells, white blood cells and platelets.	1 test		E.g. BC Health Guide Complete Blood Count (CBC): <a href="http://www.bchealthguide.org/kbase/topic/medtest/hw4260/descrip.htm">http://www.bchealthguide.org/kbase/topic/medtest/hw4260/descrip.htm</a>	Form 4.1 & 14

<input type="checkbox"/>	creatinine	Creatinine tests measure the level of the waste product creatinine in your blood and urine.	1 test		E.g. BC Health Guide Creatinine and Creatinine Clearance <a href="http://www.bchealthguide.org/kbase/topic/medtest/hw4322/descrip.htm">http://www.bchealthguide.org/kbase/topic/medtest/hw4322/descrip.htm</a>	Form 14
<input type="checkbox"/>	arterial blood gas	"An arterial blood gas (ABG) test measures the acidity (pH) and the levels of oxygen (PO <sub>2</sub> ) and carbon dioxide (PCO <sub>2</sub> ), bicarbonate (HCO <sub>3</sub> ), and oxygen saturation in the blood."	1 test		E.g. BC Health Guide Arterial Blood Gases: <a href="http://www.bchealthguide.org/kbase/topic/medtest/hw2343/descrip.htm">http://www.bchealthguide.org/kbase/topic/medtest/hw2343/descrip.htm</a> Ministry of Health and Long Term Care Schedule of Benefits: Laboratory Services	Form 9.2
<input type="checkbox"/>	lactate	"A lactic acid test is a blood test that measures the level of lactic acid made in the body. Most of it is made by muscle tissue and red blood cells. When the oxygen level in the body is normal, carbohydrate breaks down into water and carbon dioxide. When the oxygen level is low, carbohydrate breaks down for energy and makes lactic acid"	1 test		E.g. BC Health Guide Lactate: <a href="https://www.healthlinkbc.ca/medicaltests/hw7871">https://www.healthlinkbc.ca/medicaltests/hw7871</a> Ministry of Health and Long Term Care Schedule of Benefits: Laboratory Services	Form 11.1 & 14
<input type="checkbox"/>	albumin	"Albumin is a protein that is produced in the liver and released into the blood. It helps prevent blood from leaking out of blood vessels, carries medicines and other substances through the blood, and is important for tissue growth and healing."	1 test		E.g. BC Health Guide Albumin: <a href="https://www.healthlinkbc.ca/health-topics/tv7859">https://www.healthlinkbc.ca/health-topics/tv7859</a> Ministry of Health and Long Term Care Schedule of Benefits: Laboratory Services	Form 14
<input type="checkbox"/>	blood cultures	"A blood culture is a test on a sample of blood to check for bacteria, a fungus, or sometimes viruses in the bloodstream. The test may be done if a doctor suspects a blood infection. A blood culture may help determine the specific organism causing an infection and select the appropriate	1 culture		E.g. BC Health Guide Blood Cultures: <a href="https://www.healthlinkbc.ca/healthtopics/stb117065">https://www.healthlinkbc.ca/healthtopics/stb117065</a> Ministry of Health and Long Term Care Schedule of Benefits: Laboratory Services	Form 4.3, 4B, 8.1 & 9.2 & 10
		antibiotic to treat it."				
<input type="checkbox"/>	urine cultures	"A urine culture is a test to find germs (such as bacteria) in the urine that can cause an infection. Urine in the bladder is normally sterile. This means it does not contain any bacteria or other organisms (such as fungi). But bacteria can enter the urethra and cause a urinary tract infection (UTI)."	1 culture		E.g. BC Health Guide Urine Cultures: <a href="https://www.healthlinkbc.ca/medicaltests/hw5973">https://www.healthlinkbc.ca/medicaltests/hw5973</a> Ministry of Health and Long Term Care Schedule of Benefits: Laboratory Services	Form 4.3, 4B, 8.1, 12

<input type="checkbox"/>	sputum cultures	"Sputum is a thick fluid made in the lungs and in the airways leading to the lungs. A sputum culture is a test to find germs (such as bacteria or a fungus) that can cause an infection. A sample of sputum is added to a substance that promotes the growth of germs. If no germs grow, the culture is negative. If germs that can cause infection grow, the culture is positive. The type of germ may be identified using a microscope or chemical tests. Sometimes other tests are done to find the right medicine for treating the infection. This is called <u>sensitivity testing.</u> "	1 culture		E.g. BC Health Guide Sputum Cultures: <a href="https://www.healthlinkbc.ca/medicaltests/hw5693">https://www.healthlinkbc.ca/medicaltests/hw5693</a> Ministry of Health and Long Term Care Schedule of Benefits: Laboratory Services	Form 4.3, 4B , 8.1, 9
<input type="checkbox"/>	tracheal aspirate	See sputum cultures	1 culture		E.g. BC Health Guide Sputum Cultures: <a href="https://www.healthlinkbc.ca/medicaltests/hw5693">https://www.healthlinkbc.ca/medicaltests/hw5693</a> Ministry of Health and Long Term Care Schedule of Benefits: Laboratory Services	Form 4.3, 4B , 8.1, 9
<input type="checkbox"/>	bronchoalveolar lavage cultures	Bronchoscopy is a procedure that allows your doctor to look at your airway through a thin viewing instrument called a bronchoscope. During a bronchoscopy, your doctor will examine your throat, larynx, trachea, and lower airways. (See sputum cultures)	1 culture		E.g. BC Health Guide Bronchoscopy/Sputum Cultures: <a href="https://www.healthlinkbc.ca/medicaltests/hw200474">https://www.healthlinkbc.ca/medicaltests/hw200474</a> Ministry of Health and Long Term Care Schedule of Benefits: Laboratory Services	Form 4.3, 4B , 8.1, 9
<input type="checkbox"/>	<i>C. difficile</i> polymerase chain reaction (PCR)	<i>C. difficile</i> , also known as <i>C.diff</i> , are bacteria that live in the bowel of up to 7% of people without causing illness. Your intestines also normally contain many good bacteria that help you digest food and stay healthy. When antibiotics are taken to treat an illness, these good bacteria may be killed. <i>C.diff bacteria</i> are not killed by common antibiotics and continue to grow, which may cause you to become sick.	1 test		E.g. BC Health Guide C. Difficile: <a href="https://www.healthlinkbc.ca/healthlinkbcfiles/clostridium-difficile">https://www.healthlinkbc.ca/healthlinkbcfiles/clostridium-difficile</a> Ministry of Health and Long Term Care Schedule of Benefits: Laboratory Services	Form 4.3, 4B , 8.1, 14
<input type="checkbox"/>	<i>C. difficile</i> toxin assays	<i>C. diff</i> produces toxins that can cause damage to the cells in the intestines. The most common symptom of <i>C.diff infection</i> is diarrhea. In fact, it is the most frequent cause of infectious diarrhea in hospitals and health care facilities. <i>C. diff</i> infections may lead to serious illness.	1 test		E.g. BC Health Guide C. Difficile toxin assay: <a href="https://www.healthlinkbc.ca/healthlinkbcfiles/clostridium-difficile">https://www.healthlinkbc.ca/healthlinkbcfiles/clostridium-difficile</a> Ministry of Health and Long Term Care Schedule of Benefits: Laboratory Services	Form 4.3, 4B , 8.1, 14
<input type="checkbox"/>	<i>C. difficile</i> ELISA (enzyme-linked immunosorbent	Antisera against Clostridium difficile toxin B were prepared in sheep and rabbit and were used in indirect	1 test		E.g. C. Difficile ELISA: <a href="https://www.ncbi.nlm.nih.gov/pubmed/2325114">https://www.ncbi.nlm.nih.gov/pubmed/2325114</a>	Form 4.3, 4B , 8.1, 14

assay)	and sandwich enzyme-linked immunosorbent assays (ELISA) for the detection of toxin B. Polyvinyl chloride and polystyrene microtitration plates were tested as solid phases for the assay. Both assays had a lower limit of detection for toxin B of 1 ng/ml. They were used to detect the presence of toxin B in 210 human faecal specimens and also in the culture supernatant fluids of <i>C. difficile</i> strains isolated from the faecal samples. There was a close correlation between the results of sandwich ELISA and those of cytotoxicity tests and isolation of <i>C. difficile</i> . Our sandwich ELISA method seems to be useful as a presumptive test for detection of <i>C. difficile</i> toxin B				
<input type="checkbox"/> <i>C. difficile</i> cell culture	Cell culture cytotoxicity is performed by using a fibroblast cell line in a microtiter format read at 4 h, 24 h, and 48 h from a stool sample for <i>C. Difficile</i> .	1 test		E.g. <i>C. Difficile</i> cell culture <a href="https://www.ncbi.nlm.nih.gov/pubmed/10764962?dopt=Abstract">https://www.ncbi.nlm.nih.gov/pubmed/10764962?dopt=Abstract</a>	Form 4.3, 4B , 8.1, 14
<input type="checkbox"/> <i>C. difficile</i> LAMP (loop mediated isothermal amplification)	<i>Clostridium difficile</i> infection (CDI) remains a diagnostic challenge for clinicians. More recently, loopmediated isothermal amplification (LAMP) has become readily available for the diagnosis of CDI, and many studies have investigated the usefulness of LAMP for rapid and accurate diagnosis of CDI.	1 test		E.g. <i>Clostridium difficile</i> LAMP: <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4624739/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4624739/</a>	Form 4.3, 4B , 8.1, 14
<input type="checkbox"/> anaerobic cultures	A culture is a test to find germs (such as bacteria or a fungus) that can cause an infection. A sensitivity test checks to see what kind of medicine, such as an antibiotic, will work best to treat the illness or infection. For a culture, a sample of body fluid or tissue is added to a substance that promotes the growth of germs. If no germs grow, the culture is negative. If germs that can cause infection grow, the culture is positive. The type of germ may be identified using a microscope or chemical tests. Bacteria usually grow quickly in a culture (2 days), while other types of organisms, such as a fungus, can take longer. A culture and sensitivity test may be done on many different body fluids, such as urine, mucus, blood, pus, saliva, breast milk, spinal fluid, or discharge from the vagina or penis.	1 test		E.g. BC Health Guide Culture and Sensitivity: <a href="https://www.healthlinkbc.ca/healthtopics/stc123799">https://www.healthlinkbc.ca/healthtopics/stc123799</a> Ministry of Health and Long Term Care Schedule of Benefits: Laboratory Services	Form 4.3, 4B , 8.1, 11

<input type="checkbox"/> aerobic cultures	<p>A culture is a test to find germs (such as bacteria or a fungus) that can cause an infection.</p> <p>A sensitivity test checks to see what kind of medicine, such as an antibiotic, will work best to treat the illness or infection.</p> <p>For a culture, a sample of body fluid or tissue is added to a</p>	1 culture		<p>E.g. BC Health Guide Culture and Sensitivity:  <a href="https://www.healthlinkbc.ca/healthtopics/stc123799">https://www.healthlinkbc.ca/healthtopics/stc123799</a>          Ministry of Health and Long Term Care          Schedule of Benefits:          Laboratory Services</p>	Form 4.3, 4B , 8.1, 11
	<p>substance that promotes the growth of germs. If no germs grow, the culture is negative. If germs that can cause infection grow, the culture is positive. The type of germ may be identified using a microscope or chemical tests. Bacteria usually grow quickly in a culture (2 days), while other types of organisms, such as a fungus, can take longer.</p>				
<input type="checkbox"/> thoracentesis	<p>Thoracentesis is a procedure to remove fluid from the space between the lungs and the chest wall called the pleural space. It is done with a needle (and sometimes a plastic catheter) inserted through the chest wall. Ultrasound pictures are often used to guide the placement of the needle. This pleural fluid may be sent to a lab to determine what may be causing the fluid to build up in the pleural space. Normally only a small amount of pleural fluid is present in the pleural space. A buildup of excess pleural fluid (pleural effusion) may be caused by many conditions, such as infection, inflammation, heart failure, or cancer. If a large amount of fluid is present, it may be hard to breathe. Fluid inside the pleural space may be found during a physical examination and is usually confirmed by a chest X-ray.</p>	1 culture		<p>E.g. BC Health Guide Thoracentesis:  <a href="https://www.healthlinkbc.ca/medicaltests/hw233202">https://www.healthlinkbc.ca/medicaltests/hw233202</a>          Ministry of Health and Long Term Care          Schedule of Benefits:          Laboratory Services</p>	Form 4.3, 4B , 8.1, 9
<input type="checkbox"/> paracentesis	<p>Paracentesis is a procedure to take out fluid that has collected in the belly (peritoneal fluid). This fluid buildup is called ascites. Ascites may be caused by infection, inflammation, an injury, or other conditions, such as cirrhosis or cancer. The fluid is taken out using a long, thin needle put through the belly. The fluid is sent to a lab and studied to find the cause of the fluid buildup. Paracentesis also may be done to take the fluid out to relieve belly pressure or pain in people with cancer or cirrhosis.</p>	1 culture		<p>E.g. BC Health Guide Paracentesis:  <a href="https://www.healthlinkbc.ca/medicaltests/hw198220">https://www.healthlinkbc.ca/medicaltests/hw198220</a>          Ministry of Health and Long Term Care          Schedule of Benefits:          Laboratory Services</p>	Form 4.3, 4B , 8.1, 11
Personnel ( <i>per diem</i> or <i>hourly wage</i> )					

□ ICU	First day of Comprehensive Care rendered by "an Intensive Care physician who provides both Critical Care and Ventilation Support to patients in the Intensive Care Area. The service includes initial consultation and assessment and subsequent examinations, often including comprehensive critical care procedures such as endotracheal intubation, tracheal toilet, artificial ventilation and all necessary measures for respiratory support, emergency resuscitation, insertion of intravenous lines, cutdowns, intraosseous infusion, arterial and/or venous catheters pressure infusion set and pharmacological agents, insertion	First episode/first day  Daily rate (Day 2-30)		E.g. Ontario Ministry of Health and Long Term Care Schedule of Benefits: Physician Services. Similar definitions exist for other jurisdictions.	Form 3
	of C.V.P lines, defibrillation, cardioversion and usual resuscitative measures, insertion of urinary catheters and nasogastric intubation with or without anaesthesia, securing and interpretation of blood gases and laboratory tests, oximetry, transcutaneous blood gases, intracranial pressure monitoring interpretation and assessment when indicated (excluding insertion of I.C.P. measuring device)."  Fee that is reimbursed to an Intensive Care physician for Comprehensive Care as defined above for a patient's hospitalization from day 2 to 30 inclusive.				
□ Ward physician	"Admission assessment is a general assessment rendered to a patient on admission" to a longterm care institution: nonemergency in-patient services, including chronic care hospitals  Fee that is reimbursed to a physician for services to a patient in chronic care or convalescent hospital during the "First 4 subsequent visits... per month". "A subsequent visit is any routine assessment following the patient's admission to a long-term care institution." Fee that is reimbursed to the Most Responsible Physician at the day of discharge for rendering a subsequent visit. Completion of discharge summary by the physician within 48 hours of discharge, arrangement for followup of patient and prescription of	First episode/first day.  Daily rate.  Last day.		E.g. Ontario Ministry of Health and Long Term Care Schedule of Benefits: Physician Services. Similar definitions exist for other jurisdictions.	Form 3

□ consultation physicians (i.e. general surgery, thoracic surgery, gastroenterology, infectious disease specialists, respiratory)	"Admission assessment is a general assessment rendered to a patient on admission" to a longterm care institution: nonemergency inpatient services, including chronic care hospitals	First episode/first day.		E.g. Ontario Ministry of Health and Long Term Care Schedule of Benefits: Physician Services. Similar definitions exist for other jurisdictions.	Form 3
□ nursing	Provide direct nursing care to patients, deliver health education programs and provide consultative services regarding issues relevant to the practice of nursing.	Hourly wage		E.g. Service Canada-Labour Market Information- Job Descriptions. Similar definitions exist for other jurisdictions. <a href="http://www.labourmarketinformation.ca/standard.asp?ppid=82&amp;lcode=E&amp;prov=1&amp;gaid=1&amp;occ=3214&amp;job=&amp;search_key=1&amp;search_type=&amp;employer_potential=&amp;new_search=">http://www.labourmarketinformation.ca/standard.asp?ppid=82&amp;lcode=E&amp;prov=1&amp;gaid=1&amp;occ=3214&amp;job=&amp;search_key=1&amp;search_type=&amp;employer_potential=&amp;new_search=</a> Similar definitions exist for other jurisdictions.	Form 3
□ pharmacist	Compound and dispense prescribed pharmaceuticals and provide consultative services to both clients and health care providers.	Hourly wage		E.g. Service Canada-Labour Market Information- Job Descriptions. Similar definitions exist for other jurisdictions.	Form 3
				<a href="http://www.labourmarketinformation.ca/standard.asp?ppid=82&amp;lcode=E&amp;prov=1&amp;gaid=1&amp;occ=3214&amp;job=&amp;search_key=1&amp;search_type=&amp;employer_potential=&amp;new_search=">http://www.labourmarketinformation.ca/standard.asp?ppid=82&amp;lcode=E&amp;prov=1&amp;gaid=1&amp;occ=3214&amp;job=&amp;search_key=1&amp;search_type=&amp;employer_potential=&amp;new_search=</a> Similar definitions exist for other jurisdictions.	
□ respiratory therapist	Respiratory therapists assist physicians in the diagnosis, treatment and care of patients with respiratory and cardiopulmonary disorders.	Hourly wage		E.g. Service Canada-Labour Market Information- Job Descriptions. Similar definitions exist for other jurisdictions. <a href="http://www.labourmarketinformation.ca/standard.asp?ppid=82&amp;lcode=E&amp;prov=1&amp;gaid=1&amp;occ=3214&amp;job=&amp;search_key=1&amp;search_type=&amp;employer_potential=&amp;new_search=">http://www.labourmarketinformation.ca/standard.asp?ppid=82&amp;lcode=E&amp;prov=1&amp;gaid=1&amp;occ=3214&amp;job=&amp;search_key=1&amp;search_type=&amp;employer_potential=&amp;new_search=</a> Similar definitions exist for other jurisdictions.	Form 3



<input type="checkbox"/>	physical therapist	Assess patients and plan and carry out individually designed treatment programs to maintain,	Hourly wage		E.g. Service Canada-Labour Market Information-Job Descriptions. Similar definitions exist for other jurisdictions. <a href="http://www.labourmarketinformation.ca/standard.asp?ppid=82&amp;lcode=E&amp;prov=1&amp;gaid=1&amp;occ=3214&amp;job=&amp;search_key=1&amp;search_type=&amp;employer_potential=&amp;new_search=">http://www.labourmarketinformation.ca/standard.asp?ppid=82&amp;lcode=E&amp;prov=1&amp;gaid=1&amp;occ=3214&amp;job=&amp;search_key=1&amp;search_type=&amp;employer_potential=&amp;new_search=</a> Similar definitions exist for other jurisdictions.	Form 3
<input type="checkbox"/>	social work	Help individuals, couples, families, groups, communities and organizations develop the skills and resources they need to enhance social functioning and provide counseling, therapy and referral to other supportive social services	Hourly wage		E.g. Service Canada-Labour Market Information-Job Descriptions. Similar definitions exist for other jurisdictions. <a href="http://www.labourmarketinformation.ca/standard.asp?ppid=82&amp;lcode=E&amp;prov=1&amp;gaid=1&amp;occ=3214&amp;job=&amp;search_key=1&amp;search_type=&amp;employer_potential=&amp;new_search=">http://www.labourmarketinformation.ca/standard.asp?ppid=82&amp;lcode=E&amp;prov=1&amp;gaid=1&amp;occ=3214&amp;job=&amp;search_key=1&amp;search_type=&amp;employer_potential=&amp;new_search=</a> Similar definitions exist for other jurisdictions.	Form 3
<input type="checkbox"/>	unit clerk/clerical worker	Medical secretaries perform a variety of secretarial and administrative duties in doctor's offices, hospitals, medical clinics and other medical settings.	Hourly wage		E.g. Service Canada-Labour Market Information-Job Descriptions. Similar definitions exist for other jurisdictions. <a href="http://www.labourmarketinformation.ca/standard.asp?ppid=82&amp;lcode=E&amp;prov=1&amp;gaid=1&amp;occ=3214&amp;job=&amp;search_key=1&amp;search_type=&amp;employer_potential=&amp;new_search=">http://www.labourmarketinformation.ca/standard.asp?ppid=82&amp;lcode=E&amp;prov=1&amp;gaid=1&amp;occ=3214&amp;job=&amp;search_key=1&amp;search_type=&amp;employer_potential=&amp;new_search=</a> Similar definitions exist	
					for other jurisdictions.	
	Radiology					
<input type="checkbox"/>	portable chest or abdominal radiographs	The chest/abdominal x-ray, performed portably at the patient's bedside, in the ICU or ward, usually performed as one film, in the anterior-posterior position.	1 test		E.g. Chest X-ray (Radiography): <a href="http://www.radiologyinfo.org/en/info.cfm?pg=chestrad&amp;bhcp=1">http://www.radiologyinfo.org/en/info.cfm?pg=chestrad&amp;bhcp=1</a>	Form 9, 11, 14
<input type="checkbox"/>	computerized tomography (CT) scan: chest, abdomen, pelvis, sinusitis, head	Computed tomography of the chest, abdomen, pelvis or sinuses/head, to diagnose infections	1 test		E.g. Radiology Info (Web site developed and funded by: American College of Radiology (ACR) and Radiological Society of North America (RSNA)) CT Angiography (CTA): <a href="http://www.radiologyinfo.org/en/info.cfm?pg=angiact">http://www.radiologyinfo.org/en/info.cfm?pg=angiact</a>	Form 9, 11, 14, 20

<input type="checkbox"/>	MRI: head, chest, joint	Magnetic resonance imaging (MRI) is a test that uses a magnetic field and pulses of radio wave energy to make pictures of organs and structures that are inside the body. During the MRI test (also called an MRI scan), you usually lie on your back on a table that is part of the MRI scanner. Your head, chest, and arms may be held with straps to help you stay still. The table will then slide into the round opening of the magnet.	1 test		E.g. BC Health Guide MRI: <a href="https://www.healthlinkbc.ca/healthtopics/zm6243">https://www.healthlinkbc.ca/healthtopics/zm6243</a> Ministry of Health and Long Term Care Schedule of Benefits: Laboratory Services	Form 20
<input type="checkbox"/>	abdominal ultrasound	An abdominal ultrasound takes pictures of the organs and other structures in your upper belly. It uses sound waves to show images on a screen.	1 test		E.g. BC Health Guide Abdominal Ultrasound: <a href="https://www.healthlinkbc.ca/medicaltests/hw1430">https://www.healthlinkbc.ca/medicaltests/hw1430</a> Ministry of Health and Long Term Care Schedule of Benefits: Laboratory Services	Form 11, 20
Procedural costs:						
<input type="checkbox"/>	central venous catheter	Insertion of an intravenous catheter for administration of fluid or measurement of pressures, to a central vein (internal jugular, femoral, subclavian sites).	1 item and/or 1 procedure		E.g. Ministry of Health and Long Term Care Schedule of Benefits: Physician Services Similar definitions exist for other jurisdictions.	Form 10
<input type="checkbox"/>	peripherally inserted central catheter	Insertion of an intravenous catheter for administration of fluid or measurement of pressures, to a peripheral vein	1 item and/or 1 procedure		E.g. Ministry of Health and Long Term Care Schedule of Benefits: Physician Services Similar definitions exist for other jurisdictions.	Form 10
<input type="checkbox"/>	dialysis catheter	See central venous catheter	1 item and/or 1 procedure		E.g. Ministry of Health and Long Term Care Schedule of Benefits: Physician Services Similar definitions exist for other jurisdictions.	Form 10
<input type="checkbox"/>	arterial lines	Insertion of an intravenous catheter for administration of fluid or measurement of pressures, to a artery	1 item and/or 1 procedure		E.g. Ministry of Health and Long Term Care Schedule of Benefits: Physician Services Similar definitions exist for other jurisdictions.	Form 10
<input type="checkbox"/>	chest tube	Thoracostomy tube for drainage of pleural cavity	1 item and/or 1 procedure		E.g. Ministry of Health and Long Term Care Schedule of Benefits: Physician Services Similar definitions exist for other jurisdictions.	Form 9.1
<input type="checkbox"/>	naso- or oro-gastric tube	Feeding tube (inserted through nose or mouth)	1 item and/or 1 procedure		E.g. Ministry of Health and Long Term Care	Form 4.2
					Schedule of Benefits: Physician Services Similar definitions exist for other jurisdictions.	

<input type="checkbox"/> percutaneous endoscopic gastrostomy (PEG) tube	Feeding tube inserted into through the abdominal wall into the stomach	1 item and/or 1 procedure		E.g. Ministry of Health and Long Term Care Schedule of Benefits: Physician Services Similar definitions exist for other jurisdictions.	Form 4.2
<input type="checkbox"/> tube feed	Liquid enteral nutrition administered through a feeding tube	1 item and/or 1 procedure		E.g. hospital formulary pharmacy contact (name, date) Similar definitions exist for other jurisdictions.	Form 4.2
<input type="checkbox"/> fiber	Fibre includes all parts of plant foods that your body can't digest or absorb. Fibre is also known as roughage or bulk. Insoluble fibre helps promote regularity and a healthy digestive system. You get this type of fibre from wheat bran, whole grains, and some vegetables. Soluble fibre helps lower blood cholesterol levels and control blood sugar levels. You get this type of fibre from oats, barley, psyllium, oranges, dried beans and lentils. A high fibre diet may also help prevent colon cancer. Eating high fibre foods may help you feel full for a longer time, which helps with appetite and weight control.	1 item and/or 1 procedure		E.g. hospital formulary pharmacy contact (name, date) Similar definitions exist for other jurisdictions.	Form 4.2
<input type="checkbox"/> protein supplement	Protein is composed of various types of amino acids, provides the raw material for muscle construction and repair, as well as playing an important role in the immune system, the endocrine (hormone production) system, and the transmission of nerve impulses throughout the nervous system. A supplement is any addition to an patient's regular diet to achieve a particular nutritional goal; a supplement may be a natural or a synthetic product. Supplements are available in fluid, powder, and solid food formulations.	1 item and/or 1 procedure		E.g. hospital formulary pharmacy contact (name, date) Similar definitions exist for other jurisdictions.	Form 4.2
<input type="checkbox"/> ventilator circuit changes	Ventilator circuit refers to the tubing that connects the ventilator to the patient, as well as any devices that might be connected to the circuit. Routine changes of this circuit vary from jurisdiction to jurisdiction	1 item and/or 1 procedure		<a href="https://www.ncbi.nlm.nih.gov/pubmed/20406515">https://www.ncbi.nlm.nih.gov/pubmed/20406515</a> E.g. Ministry of Health and Long Term Care Schedule of Benefits: Physician Services Similar definitions exist for other jurisdictions.	PROSPECT Site Information
<input type="checkbox"/> endotracheal tubes (with subglottic suction)	An endotracheal tube is a flexible plastic tube that is placed through the mouth into the trachea (windpipe) to help a patient breathe. The endotracheal tube is then connected to a ventilator, which delivers oxygen to the lungs Subglottic suctioning capabilities help remove secretions below the glottis, and help reduce ventilator-associated pneumonia	1 item and/or 1 procedure		E.g. Ministry of Health and Long Term Care Schedule of Benefits: Physician Services Similar definitions exist for other jurisdictions.	Form 3, 4.1

□ endotracheal tubes (without subglottic suction)	An endotracheal tube is a flexible plastic tube that is placed through the mouth into the trachea (windpipe) to help a patient breathe. The endotracheal tube is	1 item and/or 1 procedure		E.g. Ministry of Health and Long Term Care Schedule of Benefits: Physician Services Similar definitions exist	Form 3, 4.1
	then connected to a ventilator, which delivers oxygen to the lungs. Some tubes do not have subglottic suctioning capabilities			for other jurisdictions.	
□ invasive ventilation (ventilator days)	Invasive mechanical ventilation can become a lifesaving intervention for your patients with respiratory and breathing difficulties. The term "invasive" is used if it involves any instrument penetrating via the mouth (such as an endotracheal tube), nose, or the skin (such as a tracheostomy tube through a stoma, a surgically-created hole in the windpipe) to serve as an artificial airway. The objectives of mechanical ventilation are primarily to provide oxygen, remove carbon dioxide, decrease the work of breathing and reverse lifethreatening conditions such as hypoxemia, or insufficient oxygenation of arterial blood, and acute progressive respiratory acidosis, or build-up of carbon dioxide in the blood	1 item and/or 1 procedure		E.g. Ministry of Health and Long Term Care Schedule of Benefits: Physician Services Similar definitions exist for other jurisdictions.	Form 3, 4.1
○ heat moisture exchange	Heat and Moisture Exchangers (HME) are devices used in mechanically ventilated patients intended to help prevent complications due to "drying of the respiratory mucosa, such as mucus plugging and endotracheal tube (ETT) occlusion." HMEs are one type of commercial humidification system, which also include non-heated-wire humidifiers and heated-wire humidifiers.	1 item and/or 1 procedure		E.g. Ministry of Health and Long Term Care Schedule of Benefits: Physician Services Similar definitions exist for other jurisdictions.	PROSPECT Site Information
○ heated humidifier	Heated humidifiers or heated breathing circuits are typically a sealed heated wire within one limb of the breathing circuit. Sterile water is introduced into the circuit and the servomechanism controlled heater maintains temperature. These devices are prone to hazards, such as overheating, condensation, changes in the compressible volume of the circuit, leaks in the tubing, and obstruction, if they are not connected correctly.	1 item and/or 1 procedure		E.g. Ministry of Health and Long Term Care Schedule of Benefits: Physician Services Similar definitions exist for other jurisdictions.	PROSPECT Site Information

<input type="checkbox"/>	non-invasive positive pressure ventilation	Noninvasive ventilation (NIV) refers to the administration of ventilatory support without using an invasive artificial airway (endotracheal tube or tracheostomy tube). Noninvasive positive pressure ventilation (NIPPV) assists a person in taking a full breath and helps to maintain an adequate oxygen supply to the body. NIPPV provides ventilatory support to a person through the upper airways	1 item and/or 1 procedure		E.g. Ministry of Health and Long Term Care Schedule of Benefits: Physician Services Similar definitions exist for other jurisdictions.	Form 4.1
<input type="checkbox"/>	high-flow nasal cannula	High-flow nasal cannula (HFNC) therapy is an oxygen supply system capable of delivering up to 100% humidified and heated oxygen at a flow rate of up to 60 liters per minute	1 item and/or 1 procedure		E.g. Ministry of Health and Long Term Care Schedule of Benefits: Physician Services Similar definitions exist for other jurisdictions.0	Form 4.1
	Vasopressor agents					
<input type="checkbox"/>	norepinephrine	norepinephrine (vasopressor agent:	Per		E.g. hospital formulary	Form 4.1
		primarily alpha receptor agonist with some beta activity) that is given continuously as a diluted liquid	microgram or milligram		pharmacy contact (name, date)	
<input type="checkbox"/>	vasopressin	vasopressin (vasopressin receptor agonist) that is given continuously as a diluted liquid	Per microgram or milligram		E.g. hospital formulary pharmacy contact (name, date)	Form 4.1
<input type="checkbox"/>	phenylephrine	phenylephrine (primarily alpha receptor agonist) that is given continuously as a diluted liquid	Per microgram or milligram		E.g. hospital formulary pharmacy contact (name, date)	Form 4.1
	Inotropic agents					
<input type="checkbox"/>	epinephrine	epinephrine (both alpha and beta agonist) that is given continuously as a diluted liquid	Per microgram or milligram		E.g. hospital formulary pharmacy contact (name, date)	Form 4.1
<input type="checkbox"/>	dobutamine	dobutamine (primarily beta agonist) that is given continuously as a diluted liquid	Per microgram or milligram		E.g. hospital formulary pharmacy contact (name, date)	Form 4.1
<input type="checkbox"/>	milrinone	milrinone (phosphodiesterase inhibitor) that is given continuously as a diluted liquid	Per microgram or milligram		E.g. hospital formulary pharmacy contact (name, date)	Form 4.1
<input type="checkbox"/>	dopamine	dopamine (primarily beta agonist, with some alpha activity) that is given continuously as a diluted liquid	Per microgram or milligram		E.g. hospital formulary pharmacy contact (name, date)	Form 4.1
	VAP prevention bundles					
<input type="checkbox"/>	chlorhexidine usage	chlorhexidine oral washes (site specific)	1 item/1 procedure		E.g. hospital formulary pharmacy contact (name, date)	PROSPECT Information Site
<input type="checkbox"/>	bacterial filters	bacterial filters (site specific)	1 item/1 procedure		E.g. hospital formulary pharmacy contact (name, date)	PROSPECT Information Site
<input type="checkbox"/>	oral decontamination	oral decontamination (site specific)	1 item/1 procedure		E.g. hospital formulary pharmacy contact (name, date)	PROSPECT Information Site
<input type="checkbox"/>	gut decontamination	Gut decontamination (site specific)	1 item/1 procedure		E.g. hospital formulary pharmacy contact (name, date)	PROSPECT Information Site

○ oral antibiotic paste	oral antibiotic paste (site specific)	1 item/1 procedure		E.g. hospital formulary pharmacy contact (name, date)	PROSPECT Site Information
□ colonoscopy (cautery, epinephrine injection)	A colonoscopy is an examination of a patient's large intestine (colon and rectum), often to find areas of inflammation or bleeding. using a colonoscope with fiber optic visualization, performed usually in the ICU, occasionally in the endoscopy suite of a hospital."	1 item/1 procedure		E.g. BC Health Guide Colonoscopy: <a href="http://www.bchealthguide.org/kbase/topic/medtest/hw209694/descrip.htm">http://www.bchealthguide.org/kbase/topic/medtest/hw209694/descrip.htm</a> Ministry of Health and Long Term Care Schedule of Benefits: Laboratory Services	Form 14
□ transesophageal echocardiograms	In a transesophageal echocardiogram, a transducer is inserted through the mouth and down the throat into the esophagus. High-pitched sound waves (ultrasound) are sent through the transducer to produce an image of the heart and sometimes the aorta. This method allows a clear view of the valves and their ability to function. It provides a better view of heart valves than a standard transthoracic echocardiogram, but the procedure is more complicated	1 item/1 procedure		E.g. BC Health Guide Transesophageal echocardiogram: <a href="https://www.healthlinkbc.ca/healthtopics/stt11675">https://www.healthlinkbc.ca/healthtopics/stt11675</a> Ministry of Health and Long Term Care Schedule of Benefits: Laboratory Services	Form 8, 20
□ transthoracic echocardiograms	An echocardiogram (also called an echo) is a type of ultrasound test that uses high-pitched sound waves that are sent through a device called a transducer. The device picks up echoes of the sound waves as they bounce off	1 item/1 procedure		E.g. BC Health Guide Echocardiograms: <a href="https://www.healthlinkbc.ca/medicaltests/hw212692">https://www.healthlinkbc.ca/medicaltests/hw212692</a> Ministry of Health and Long Term Care	Form 8, 20

	the different parts of your heart. These echoes are turned into moving pictures of your heart that can be seen on a video screen.			Schedule of Benefits: Laboratory Services	
□ bronchoscopy	A bronchoscopy examines the patient's airway with a flexible fiberoptic bronchoscope, to determine if there may be an infection, obstruction due to secretions, a mass	1 item/1 procedure		E.g. BC Health Guide Bronchoscopy: <a href="http://www.bchealthguide.org/kbase/topic/medtest/hw200474/descrip.htm">http://www.bchealthguide.org/kbase/topic/medtest/hw200474/descrip.htm</a> Ministry of Health and Long Term Care Schedule of Benefits: Laboratory Services	Form 8, 9
□ thoracostomy	After lung surgery, one or more chest tubes are used to drain fluid and blood out of the chest cavity. The chest tubes also help the lungs refill with air.	1 procedure		E.g. BC Health Guide Chest Tube: <a href="https://www.healthlinkbc.ca/healthtopics/zm2679">https://www.healthlinkbc.ca/healthtopics/zm2679</a> Ministry of Health and Long Term Care Schedule of Benefits: Laboratory Services	Form 8, 9

<input type="checkbox"/>	tracheostomy	Tracheostomy is surgery that is sometimes used to treat obstructive sleep apnea (OSA), failure to wean from ventilator or pulmonary toilet. In this surgery, the surgeon creates a permanent opening in the neck to the windpipe (trachea). He or she then puts a tube into the opening to let air in.	1 procedure		E.g. BC Health Guide Tracheotomy: <a href="https://www.healthlinkbc.ca/healthtopics/hw49093">https://www.healthlinkbc.ca/healthtopics/hw49093</a> Ministry of Health and Long Term Care Schedule of Benefits: Laboratory Services	Form 4.1
<input type="checkbox"/>	interventional radiology drain	Centesis is a procedure to take out fluid that has collected in a cavity. The fluid is taken out using a long, thin needle put through the belly. The fluid is sent to a lab and studied to find the cause of the fluid buildup. Paracentesis can also leave a drain	1 procedure		E.g. Ontario Ministry of Health and Long Term Care Schedule of Benefits: Physician Services. Similar definitions exist for other jurisdictions.	Form 9
<input type="checkbox"/>	intermittent hemodialysis	Dialysis is a mechanical process that performs the work of healthy kidneys. Hemodialysis uses a manmade membrane (dialyzer) to remove wastes and extra fluid from the blood. It also restores the proper balance of certain minerals in the blood (electrolytes). The fluid used to filter or clean the blood is called dialysate. Hemodialysis is usually done in a hospital or dialysis centre. Before dialysis can begin, the doctor has to create a dialysis access. In hemodialysis, the access is the place where the dialysis needles are inserted, to carry the blood to and from the dialysis machine. For the best access, the doctor builds a connection, called a fistula, between an artery and a vein in the forearm. Or the doctor uses a tube called a graft to connect the artery and a vein. Sometimes a plastic tube (central venous catheter) is placed in the neck.	1 procedure		E.g. Ontario Ministry of Health and Long Term Care Schedule of Benefits: Physician Services. Similar definitions exist for other jurisdictions.	Form 4.1
<input type="checkbox"/>	continuous renal replacement therapy	Continuous veno-venous haemodiafiltration	1 item/1 procedure		E.g. Ontario Ministry of Health and Long Term Care Schedule of Benefits: Physician Services. Similar definitions exist for other	Form 4.1
					jurisdictions.	
<input type="checkbox"/>	peritoneal dialysis	Peritoneal dialysis through abdominal cannulae	1 item/1 procedure		E.g. Ontario Ministry of Health and Long Term Care Schedule of Benefits: Physician Services. Similar definitions exist for other jurisdictions.	Form 4.1
<input type="checkbox"/>	fecal management device	Flexiseal device for fecal management	1 item/1 procedure		E.g. Ontario Ministry of Health and Long Term Care Schedule of Benefits: Physician Services. Similar definitions exist for other jurisdictions.	Form 4.3

<input type="checkbox"/> fecal transplant	<p><i>Clostridium difficile</i> colitis (or <i>C. difficile</i> colitis) is inflammation of the large intestine (colon) caused by a certain type of bacteria (<i>Clostridium difficile</i>). It sometimes occurs after a hospital stay or antibiotic treatment.</p> <p>Symptoms (which can be mild or severe) include stomach cramps, diarrhea, nausea, vomiting, and fever. The first step in treatment for <i>C. difficile</i> colitis is to stop taking the antibiotics that caused the infection, if possible. Treatment also may include taking an antibiotic that specifically kills <i>C. difficile</i>.</p> <p>You may get a medicine called a bile salt binder (such as cholestyramine) that can help control the diarrhea. And probiotics, which are bacteria that help keep the natural balance of organisms (microflora) in the intestines, may be helpful for people who have repeated <i>C. difficile</i> infections.</p> <p>In some cases, a fecal transplant can be done that restores good bacteria to the colon and helps get rid of the <i>C. difficile</i> infection.</p>	1 procedure		<p>E.g. BC Health Guide Fecal Transplant: <a href="http://www.bchealthguide.org/kbase/topic/medtext/hw200474/descript.htm">http://www.bchealthguide.org/kbase/topic/medtext/hw200474/descript.htm</a></p> <p>Ministry of Health and Long Term Care Schedule of Benefits: Laboratory Services</p>	Form 4.3
Operative costs					
<input type="checkbox"/> laparotomy (toxic megacolon, bowel perforation)	<p>"Laparotomy is a surgical procedure that allows the surgeon to see and inspect the abdominal cavity for structural problems. This encompasses the surgeon fee; separate costs include the time for other operating room personnel, including nurses (often 2), an assistant physician, and overhead costs for the operating room (cleaning, power, etc.), captured variably at each hospital.</p>	1 procedure		<p>E.g. BC Health Guide Surgery for laparotomy: <a href="http://www.bchealthguide.org/kbase/topic/detail/surgical/tv2567/detail.htm">http://www.bchealthguide.org/kbase/topic/detail/surgical/tv2567/detail.htm</a></p>	Form 14
<input type="checkbox"/> colectomy	<p>Toxic megacolon is a rare but dangerous condition that occurs when the colon swells to many times its normal size. It is usually a complication of an inflammatory bowel disease, such as ulcerative colitis or Crohn's disease.</p> <p>Severe inflammation and ulceration can weaken muscles in the colon, causing the colon to swell. Symptoms may include a swollen belly, abdominal pain or tenderness, rapid heartbeat, or fever. Over time, holes</p>	1 procedure		<p>E.g. BC Health Guide Toxic megacolon: <a href="https://www.healthlinkbc.ca/health-topics/tb1915">https://www.healthlinkbc.ca/health-topics/tb1915</a></p> <p>Ontario Ministry of Health and Long Term Care Schedule of Benefits: Physician Services. Similar definitions exist for other jurisdictions.</p>	Form 14



	(perforations) may form in the colon, and stool may spill into the abdominal cavity, causing a serious infection. This can be lifethreatening. Toxic megacolon is an emergency that requires immediate medical treatment to prevent dehydration and shock. Surgery may be needed to remove all or part of the colon (colectomy).				
<input type="checkbox"/> thoracotomy	"one or more chest tubes are used to drain fluid and blood out of the chest cavity. The chest tubes also help the lungs refill with air."	1 procedure		E.g. BC Health Guide Chest tube: <a href="https://www.healthlinkbc.ca/healthtopics/zm2679">https://www.healthlinkbc.ca/healthtopics/zm2679</a> Ontario Ministry of Health and Long Term Care Schedule of Benefits: Physician Services. Similar definitions exist for other jurisdictions.	Form 9.1
<input type="checkbox"/> open abdominal wound (vacuumassisted closure (VAC) devices)	Negative-pressure wound therapy (sometimes called "vacuum-assisted closure"). A sterile sponge or a special gauze that fights germs is placed in the sore. It's covered with a sticky bandage that does not allow any air in. The small vacuum is then turned on and kept on at all times until the next treatment. The vacuum pulls drainage from the wound and gently pulls the blood supply close to the surface of the sore. This brings nutrients to the sore and helps new tissue grow.	1 procedure		E.g. BC Health Guide Negative-pressure wound therapy: <a href="https://www.healthlinkbc.ca/healthtopics/abp5591">https://www.healthlinkbc.ca/healthtopics/abp5591</a> Ontario Ministry of Health and Long Term Care Schedule of Benefits: Physician Services. Similar definitions exist for other jurisdictions.	Form 14
<input type="checkbox"/> surgeon	"Laparotomy is a surgical procedure that allows the surgeon to see and inspect the abdominal cavity for structural problems. This encompasses the surgeon fee; separate costs include the time for other operating room personnel, including nurses (often 2), an assistant physician, and overhead costs for the operating room (cleaning, power, etc.), captured variably at each hospital.	1 procedure		E.g. Ontario Ministry of Health and Long Term Care Schedule of Benefits: Physician Services. Similar definitions exist for other jurisdictions.	Form 4.1, 14

□ surgical assistant	See above in Laparotomy-surgical fee; Assistance at surgery include: a) Preparing or supervising preparation of the patient for the procedure b) Performing the procedure by any method, or assisting another physician in the performance of the procedure(s), assisting with carrying out of all recovery room procedures and transfer of the patient to the recovery room, and any ongoing monitoring and detention rendered during the immediate post-operative and recovery period, when indicated. c) Making arrangements for any related assessments, procedures, or therapy	1 procedure		E.g. Ontario Ministry of Health and Long Term Care Schedule of Benefits: Physician Services. Similar definitions exist for other jurisdictions.	Form 4.1, 14
	(including obtaining any specimens from the patient) and/or interpreting results. d) When medically indicated, monitoring the condition of the patient for post-procedure follow-up until the first post-operative visit. e) Discussion with and providing any advice and information, including prescribing therapy to the patient or the patient's representative(s), whether by telephone or otherwise, on matters related to the service Providing premises, equipment, supplies and personnel for services for any aspect(s) of a, c, d and e that is (are) performed in a place other than the place in which the surgical procedure is performed.				
□ anesthesiology	See above in Laparotomy- surgical fee; the anesthesia component including pre-operative assessment of the patient, anesthesia during the procedure and post-operative care until the patient is discharged back to the care of the next responsible physician (e.g. the intensive care physician or surgeon)	1 procedure		E.g. Ontario Ministry of Health and Long Term Care Schedule of Benefits: Physician Services. Similar definitions exist for other jurisdictions.	Form 4.1, 14
□ nursing	See above in Laparotomy-surgical fee; nurses assist surgery.	Per hour For 1 procedure		E.g. as defined at hospital level and associated costs of nursing per hour or procedure in the operating room	Form 4.1, 14
Overhead costs					

□ ICU days	The definition for the ICU where the most intensive life-supporting care can be provided. In the Ontario context, ICU's are designated Level III (all levels of cardiac and respiratory and other organ life support can be provided; nursing:patient ratio is usually 1:1 or 1:2); Level II (often patients can receive intravenous vasoactive medications, and occasionally have endotracheal intubation, but not mechanical ventilation; nursing ration is often 1:2-4); Level I ICU (can provide respiratory or cardiographic monitoring, possibly an arterial blood pressure or central venous catheter, but not generally intravenous vasoactive medications; nursing ratio often 1:3-4) - We will require the cost breakdown of component parts of the ICU stay (as to prevent double-counting of items)	1 day		E.g. critical care directorate web site of jurisdiction	Form 3, 4, 17, 18
□ ward days	General in-patient ward bed in acute care hospital - We will require the cost breakdown of component parts of the ICU stay (as to	1 day		E.g. Ontario ministry of health and long-term care	Form 3, 4, 4B 17, 18
	prevent double-counting of items)				

CT = computerized tomography; ECMO = extracorporeal membrane oxygenation; ELISA = enzyme-linked immunosorbent assay; IABP = intra-aortic balloon pump; ICU = intensive care unit; LAMP = loop-mediated isothermal amplification; MRI = magnetic resonance imaging; NM = nuclear medicine; PEG = percutaneous endoscopic gastrostomy; PCR = polymerase chain reaction; PROSPECT = Probiotics: Prevention of Severe Pneumonia and Endotracheal Colonization Trial; US = United States; V-A = venous-arterial; V-V = veno-venous; VAC = vacuum-assisted closure; VAP = ventilator-associated pneumonia;