An integrated care pathway (ICP) is a multidisciplinary outline of anticipated care, placed in an appropriate timeframe, to help a patient with a specific condition or set of symptoms move progressively through a clinical experience to positive outcomes.

Variations from the pathway may occur as clinical freedom is exercised to meet the needs of the individual patient.

ICPs are important because they help to reduce unnecessary variations in patient care and outcomes. They support the development of care partnerships and empower patients and their carers.

ICPs can also be used as a tool to incorporate local and national guidelines into everyday practice, manage clinical risk and meet the requirements of clinical governance.

When designing and introducing ICPs, it is important to incorporate them into organisational strategy and choose appropriate topics which will provide opportunities for improvement.
What is an ICP?

An ICP is a multidisciplinary outline of anticipated care for patients with a similar diagnosis or set of symptoms. The ICP document specifies the interventions required for the patient to progress along the pathway and places them against a timeframe measured in terms of hours, days, weeks or milestones (Box 1).

Initially, the development of pathways concentrated on surgical procedures and ‘predictable’ medical conditions with a definable sequence of events, but attention is increasingly turning to more complex medical conditions and patients treated in the community.

ICPs are ‘patient-focused’ as they view the delivery of care in terms of the ‘patient’s journey’ and seek to improve both the coordination and the consistency of care. Emphasis is placed on the provision of appropriate care – that is, what is suitable for each individual patient in relation to the clinical evidence base and/or consensus of best practice.

In practical terms, the ICP can act as the single record of care, with each member of the multi-disciplinary team required to record his or her input on the ICP document. The use of both process-based (ie, the tasks to be performed) and outcome-based documentation (ie, the results to be achieved) acts as a guide to decision making and provides each professional with valuable information about the patient’s condition while also monitoring his or her progress.

Variations from the ICP
While the ICP acts as a template of the care to be provided to the chosen group of patients, it is not intended to compromise clinical judgement. Any member of the clinical team can deviate from the pathway if there is a valid reason for doing so. In essence, the pathway asks each clinician to determine whether each defined intervention is appropriate for a given patient, thereby promoting clinical freedom based on the needs of the individual. Variations from the pathway are actioned immediately, with remedial activity undertaken to return the patient to the ICP.

Subsequent analysis of variations from the pathway provides information to the clinical team on the overall quality of care and helps to identify any trends that may require further investigation. This, in turn, supports the management of clinical risk and allows modifications and improvements to be made to the content of the pathway. ICPs are dynamic documents, and change is to be expected as new evidence, clinical guidelines and treatment patterns emerge.

Why are ICPs important?
ICPs are important because, by providing explicit standards, they help to reduce unnecessary variations in patient care and outcomes. They can improve
What is an ICP?

multidisciplinary (and multi-agency) communication and collaboration, empower and inform patients and their carers, and help to meet the requirements of clinical governance (Figure 1).

The use of ICPs allows clinical teams to identify strengths and weaknesses within areas of clinical activity and to ensure that clinical guidelines and available evidence are incorporated into everyday practice. Routine monitoring of ICPs and retrospective analysis of variations help to highlight areas of clinical risk and complete the clinical audit cycle. The ICP makes explicit the standard(s) of care against which actual care can be judged. Deviations from this standard can be used to inform changes in practice and to assess the relationship between different interventions and individual patient outcomes.

The ICP defines the relationships that exist between the professionals and agencies involved in delivering care to specific patient groups. All members of the clinical team are given a clear idea of what is expected of them, and for this reason ICPs can also be used as an integral feature of ongoing professional training and orientation programmes for new and bank staff. The time spent documenting patient care is also reduced, and full compliance with ICPs meets the United Kingdom Central Council standards for clinical record keeping.

Patients whose care is managed through an ICP are given realistic expectations about their condition and their expected progress. Patients and their carers are also encouraged to ask questions about the nature of their care, and some sites are actively developing patient pathways to support this process. This will help to improve patient satisfaction and reduce complaints.

Critical success factors
The delivery of these benefits is, however, dependent on compliance with several critical success factors. These can be defined as:
- ICPs are included as part of an organisational quality programme.
- Collaboration exists between professional groups, with a strong medical lead.
What is an ICP?

Appropriate topics are chosen, and ICPs are based on available evidence/best practice and include goals and outcomes.

Project facilitators have appropriate skills, and the expectations of staff are clearly managed.

Variations from the ICP are collected and analysed.

ICPs are ‘owned’ by clinical staff and completed by all staff involved.

The presence of all these success factors helps to ensure that ICPs are used ‘to make a difference’. Evidence suggests that successful ICPs can improve both patient satisfaction and outcomes, reduce length of stay and promote appropriate targeting of resources. Such a ‘patient-focused’ approach to therapeutic management also helps to improve patient care and reduce duplication of effort. By standardising best practices, actively managing risk and facilitating primary, secondary and social care interfaces – as well as significantly reducing administrative load – ICPs should provide a powerful and welcome clinical and operational tool.

How to develop an ICP

ICPs work best when the decision to develop them is taken on an organisational basis. This allows the development process to be aligned with organisational objectives, and a business case can be developed for each chosen topic (Box 2). This approach also helps to demonstrate senior management commitment to the principles of ICPs.

A key feature in the development of ICPs is often the appointment of a designated facilitator to manage the ICP programme. The role of the facilitator is to provide ongoing education and support and to act as a link between different professional groups. To perform this role successfully the facilitator will require a wide range of skills, including the ability to lead and motivate others and to work well under pressure and to strict deadlines.

Process maps

The first stage of ICP development is essentially a baseline review of current practice for the chosen group of patients, undertaken by representatives of the

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**Box 2. Choosing an appropriate topic**

When selecting an appropriate topic to develop an ICP, the following criteria should be taken into consideration:

- Common condition (high percentage of patients) or
- High-risk condition or
- Problem area (with opportunities for improvement) or
- Staff expressed preference (to ensure commitment)

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**Figure 2. ‘High-level’ process map for management of methicillin-resistant Staphylococcus aureus (MRSA)**

- Positive diagnosis of MRSA
  - Decision to treat
  - Consider isolation
  - Treatment of colonised MRSA
  - Treatment of systemic MRSA
  - Outcome(s)
multidisciplinary team. This review will involve agreeing the scope and boundaries of the pathway, the desired outcomes of care and the development of a multidisciplinary **process map**. A process map is a ‘picture’ of the plan of care (Figure 2, opposite). The process map will help to define:

- The sequence of steps and activities performed during delivery of care to the chosen patient group.
- Specific responsibilities for these steps and activities.
- The relationships that exist between the different individuals and departments in the process.
- Potential problem areas (‘failure points’) and opportunities for improvements in current practice.

The completed process map will form the basis of the final ICP document. It can also be used to test existing practice against available evidence or the practice of different clinicians and organisations. A case-note review of the last 10–20 patients from the chosen patient group will help to complete this map.

**The ICP document**

Before translating the process map into an ICP document, some thought needs to be given to the format of the pathway. ICP documentation needs to be clear, simple and easy to use and, where possible, consistent with the style of ICPs used in other clinical areas.

Compiling the ICP document is essentially achieved by analysing the completed process map in order to establish:

- Manageable steps along with an appropriate timeframe.
- Decision points within the process and assessment tools to be used. This may include steps to be taken to manage ‘common’ variations from the expected or known risks (such as methicillin-resistant *Staphylococcus aureus* (MRSA) or deep vein thrombosis).

Such an ICP could be used as a stand-alone document or in conjunction with ICPs for other conditions.

- The investigations and interventions to be performed, and who is the most appropriate professional to perform them.
- Criteria for referral to other professionals and agencies.
- Milestones and outcome measures, and any guidelines or protocols to be included.
- Monitoring arrangements.

There follows an example of a generic ICP document for the management of adults with MRSA (pages 6–7). These pages are intended as an example to help in the development of your own documents; ICPs need to reflect local conditions and guidelines and these will obviously alter content.

The first page gives guidance on the use of the ICP, and explains its components including the identification of the decision points that determine the appropriate management plan. The decision to treat form should be completed first then the relevant management plan sheet, as listed below:

- Treatment of adult patients colonised with MRSA.
- Systemic treatment of adult patients infected with MRSA.

**References**

**Guidance for use**

This ICP represents usual practice, and variations are expected as clinical staff use their own professional judgement.

**ICP developed 1.2.2000**

Review date 1.2.2001


**Local protocols may differ as the guidelines must be adapted to fit in with local circumstances.**

**Decision to treat**

Following a positive result of MRSA from the pathology department, an informed decision is to be made to treat or not treat the patient. Please complete all the boxes and sign at the bottom of the page.

**Outcome:**
1. Decision to treat based on site of infection and degree of risk to other patients.
2. Isolation precautions are met.

Outcome 1: achieved yes ☑ no ☐
Outcome 2: achieved yes ☑ no ☐

**Management plan for treatment of adult patient colonised with MRSA**

Use this page only when managing a colonised infection.

**Outcome:**
1. Infection is contained to patient identified with MRSA.
2. Treatment is successful.

Outcome 1: achieved yes ☑ no ☐
Outcome 2: achieved yes ☑ no ☐

**Management plan for systemic treatment of patient infected with MRSA**

Use this page only when managing a systemic infection.

**Outcome:**
1. Treatment successful.
2. Plasma levels, liver function tests and clinical checks are monitored.

Outcome 1: achieved yes ☑ no ☐
Outcome 2: achieved yes ☑ no ☐

**Recording of variance**

Variance from the planned care must be recorded, signed and dated, together with the reason why this happened and the alternative plan of care.

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**Treatment of adult patient colonised with MRSA**

**Patient name:**

**Hospital number:**

**Please remember:**

- Re-emergence of resistant strains is common; these patients should always be considered as carriers
- If surgery is required, systemic prophylaxis may be necessary
- Treatment may be decided upon due to risk and vulnerability of other patients
- A carrier may become a heavy disperser of Staphylococcus if he/she develops an upper respiratory tract infection
- The throat is more likely to be infected if the patient has dentures

**Management:**

**Five-day topical treatment plan**

**Nasal**

**Bactroban**

Nasal preparation

**Apply to nose three times a day**

**Note:**

- Broil
- groin

**Patient is clear only when 3rd set of swabs are negative**

- 48 hours after 2nd treatment cycle, contact infection control team
- If any of the above tests positive, start 2nd treatment cycle

**Transfer/dischage of patients**

- Inform relevant people
- Wear gloves and apron, and wash hands
- Send curtains for cleaning
- Decontaminate non-disposable equipment with detergent and water killing by hypochlorite solution
- Allow all surfaces to dry before using equipment again
- Place last on list for O/R or surgery

**Systemic treatment of adult patient infected with MRSA**

**Patient name:**

**Hospital number:**

**Please remember:**

- Delay in initiating effective MRSA therapy is a significant mortality risk factor
- Intensive care patients have a higher risk of developing MRSA infection than medical patients
- A combined medical and surgical approach may be necessary

**Drug 1**

**Close**

**Route**

**Duration**

**Frequency**

**Signature and date**

**Monitoring**

**Side-effect**

**Proven date**

**Drug stopped (specify)**

**If there are any variances to ICP, please sign and date the reason(s) and alternative action taken**

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**Isolation precautions**

- Hand washing following contact
- Gloves when dealing with infected site(s)
- Apron for close contact
Vancomycin or teicoplanin, possibly combined with rifampicin, may be used for severe infections. For continuing treatment or less severe infection, a combination of rifampicin and fusidic acid may be used (if organism susceptible). Quinupristin/dalfopristin should be reserved for unresponsive severe infections or for when IV therapy is appropriate.

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Route</th>
<th>Frequency</th>
<th>Guidance on dosage until levels available</th>
</tr>
</thead>
</table>
| Vancomycin          | 1,000 mg | IV, given over at least 100 mins | 12-hourly | CrCl (ml/min):  
|                     |          |       |                 | >50: 12-hourly  
|                     |          |       |                 | 30-50: 24-hourly  
|                     |          |       |                 | <30: load, then measure levels* |

**Monitoring**

**Plasma levels**

- Pre-dose “trough” 5–10 mg/l checked at 48 hours
- If >10 mg/l increase dose interval/perhaps omit a dose
- Monitor every two days when previous level satisfactory

**Renal function tests** may be helpful

**Clinical checks** on hearing (e.g., tinnitus)

*Discuss with microbiologist

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Route</th>
<th>Frequency</th>
<th>Guidance on dosage until levels available</th>
</tr>
</thead>
</table>
| Teicoplanin         | 400 mg (reduced from day 4 in renal impairment) | IV | 12-hourly for three doses, then daily | Reduced renal function:  
|                     |          |       |                 | CrCl (ml/min):  
|                     |          |       |                 | 40–60: reduce by 50%  
|                     |          |       |                 | <40: reduce by 66% ** |

**Monitoring**

**Plasma levels** helpful in complex cases

- Pre-dose (“trough”) >10 mg/l
- Post-dose (“peak”) 20–50 mg/l

**Discussion with microbiologist if patient on renal support

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Route</th>
<th>Frequency</th>
<th>Caution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rifampicin</td>
<td>600–1,200 mg</td>
<td>Oral or IV</td>
<td>Daily (divided doses)</td>
<td>Rifampicin must always be combined with another agent active against MRSA in order to prevent emergence of resistance</td>
</tr>
</tbody>
</table>

**Monitoring**

Liver function tests

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Route</th>
<th>Frequency</th>
<th>Caution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fusidic acid</td>
<td>500 mg</td>
<td>Oral</td>
<td>8-hourly</td>
<td></td>
</tr>
</tbody>
</table>

**Monitoring**

Liver function tests

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Route</th>
<th>Frequency</th>
<th>Caution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quinupristin/ dalfopristin</td>
<td>7.5 mg/kg</td>
<td>IV or CVC, given over 60 mins</td>
<td>8-hourly</td>
<td>Use with caution in impaired renal function. Quinupristin/dalfopristin is incompatible with saline solutions – mix with 5% glucose</td>
</tr>
</tbody>
</table>

**Monitoring**

Liver function tests
Abreviated Prescribing Information: Rifadin

Presentation: Capsules 150mg and 300mg of rifampicin. Syrup containing 100mg/5ml of rifampicin. Infusion containing 600mg of rifampicin.

Indications: Tuberculosis: in combination with other appropriate drugs, in early and active and advanced stages, or in meningococcal meningitis. Other infections: Brucellosis,Legionnaires disease and serious staphylococcal infections, in combination with another appropriate antibiotic. Prophylaxis: Treatment of asymptomatic carriers of N meningitidis to eliminate meningococci from the nasopharynx. Haemophilus: treatment of carriers and chemoprophylaxis of exposed children. 4 years of age or younger.

Dosage & Administration: Oral Administration: Tuberculosis: Adults: 6-12mg/kg b.d. for 2 days. Children: 10-20mg/kg b.d. (maximum 600mg) daily. Leprosy: 600mg once a month or 10mg/kg daily. Usual daily dose for children 50kg or less: 400mg. Brucellosis: Legoinnaires disease or serious staphylococcal infections: Adults: 10mg/kg b.d. in 2 divided doses. Prophylaxis of meningococcal meningitis: Adults: 600mg b.d. for 2 days. Children: (1-2yrs) 10mg/kg b.d. for 2 days. (Children: 3 months-1yr) 5mg/kg b.d. for 2 days. Prophylaxis of Haemophilus influenzae: Adults & Children 20mg/kg b.d. (maximum 600mg) for 4 days. Neonates (1 month) 10mg/kg daily for 4 days. A maximum of 8mg/kg or daily in patients with impaired liver function. Use with caution in elderly patients.

IV Infusion: For acutely ill who are unable to tolerate oral therapy. Tuberculosis: Adults: 10-20mg/kg t.i.d. (maximum 12000mg) in 2-4 divided doses. Children: 5-10mg/kg t.i.d. (maximum 4000mg) daily. Neisseria meningitidis: Adults: 100mg/5ml: PL 4425/5917R; Rifadin for Infusion 600mg: PL 4425/0051 £60.00 Price: Rifadin Capsules 300mg x 100 £37.26; Rifadin Syrup 600mg/5ml x 120 £3.62. Rifadin Capsules 300mg x 100 £37.26; Rifadin Syrup 600mg/5ml x 120 £3.62. Rifadin for Infusion 600mg (plus 10ml solvent) £7.80


Legal Category: POM

Marketing Authorisation Number: Rifadin Capsules 150mg. PL 4425/5915; Rifadin Capsules 300mg. PL 4425/5916; Rifadin Syrup 600mg/5ml. PL 4425/5917; Rifadin for Infusion 600mg. PL 4425/0051 £60.00 Price: Rifadin Capsules 300mg x 100 £37.26; Rifadin Syrup 600mg/5ml x 120 £3.62. Rifadin for Infusion 600mg (plus 10ml solvent) £7.80

Further information is available from the Marketing Authorisation Holder: Aventis Pharma Ltd, 50 Kings Hill Avenue, Kings Hill, West Malling, Kent ME19 4AH. Date of Preparation: August 2000.

Abreviated Prescribing Information: Synercid

Uses

Antimicrobial prophylaxis in orthopaedic surgery at risk of Gram-positive infection.

Side Effects:

Most common – inflammation, pain, oedema, injection/infusion site reaction, thrombophlebitis and haemorrhage with peripheral administration, arthralgia and myalgia (may require dose decrease or discontinuation), nausea, diarrhoea, abdominal discomfort, vomiting, rash, headache, pruritus, asthenia. Less common: pruritus, fever, oral moniliasis, stomatitis, dyspepsia, constipation, pancreatitis, pseudomembranous colitis, abdominal pain, vaginitis, urinary tract infection, haematuria, sweating, vasodilatation, peripheral oedema, cellulitis, infection, arthralgia, fever, pneumonia, dyspepsia, pleural effusion, chest pain, back pain, palpitation, paramyotonia, myalgia, myasthenia, insomnia, anxiety, confusion, dizziness, maculopapular rash, urticaria, potentially severe allergic and anaphylactoid reaction, goitre, leg cramps, anorexia, hyponatraemia, hypertension, tachycardia, jaundice, hepatitis, pharyngitis and pruritus. Lab changes: increases in total and conjugated bilirubin. Also observed changes in eosinophils, blood urea nitrogen, gamma glutamyl transferase, gamma glutamyl transpeptidase, phosphokinase, lactate dehydrogenase, ALT, AST, haemoglobin, haematocrit, potassium, platelets, white blood cells and neutrophils. Thrombocytopenia and pancytopenia have been observed.

Pharmaceutical Precautions: Store unopened vials at 2–8°C. Vials need reconstitution and dilution before use. Reconstituted vials should be diluted within 30 minutes; diluted solution should be used within 5 hours if stored up to 23°C or 24 hours if stored at 2–8°C; do not freeze. Incompatible with saline.

Legal Category: POM

Product Licence Number: PL 002/0328. Basic NHS Price: £77.00. Full Prescribing Information is available on request from the Product Licence holder, Rhône-Poultenc, Box 50 Kings Hill Avenue, Kings Hill, West Malling, Kent, ME19 4AH. Date of Preparation: January 2000.

This publication, along with the others in the series, is available on the internet at www.evidence-based-medicine.co.uk

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