To Dip or Not To Dip – a patient centred approach to improve the management of UTI in the Care Home environment

FIS 30th November 2017

#ToDipOrNotToDip #FIS17

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#ToDipOrNotToDip

A patient centred approach to improve the management of Urinary Tract Infection UTI in the Care Home environment in Bath and North East Somerset CCG

- This is an evidence based systematic approach to improve the diagnosis and management of UTIs in residents in all 23 Nursing Homes in Bath and North East Somerset - Residential homes were not included initially.

- It was delivered by the CCG care home pharmacist service working during 2015-16, aligned to the existing GP enhanced nursing home service, and funded by the CCG as a quality improvement project in 2014 - £10K.

- Why did we do this? Local clinical audit in 2013 identified residents were frequently prescribed antibiotics for UTI (19% - 48% of residents per care home) based on use of urine dip sticking - which guidelines do not support.
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Initial results Jul-Dec 2015 NHS Bath and North East Somerset CCG

- **56% reduction** in the proportion of residents who had an antibiotic for a UTI
- 143 / 690 residents had at least one antibiotic for a UTI in 6 month period Jul-Dec 2015 after implementation

- **67% reduction** in the number of antibiotic prescriptions
- 153 fewer in 6 month period in 8 NH with pre and post data

- **82% reduction** in the number of residents prescribed antibiotic prophylaxis
- 13 / 690 residents had antibiotic prophylaxis in 6 month period Jul-Dec 2015 after implementation

- **Unplanned hospital admissions** for UTI, urosepsis and AKI reduced in NH population following implementation
Implementation in NHS Bath and North East Somerset CCG

• **Clever commissioning** – CCG incentivised nursing homes using a shadow CQUIN

• **The care home pharmacist team** – already existed, so extra funding was obtained to allow them to develop & deliver the intervention

• **Documentation and education** – used SIGN 88 guidance to structure documentation for UTI diagnosis, and implemented within an AMR educational bundle in every nursing home delivered by the pharmacist

• **Communicated** with everybody – but could have done this better

• **Monitoring** – for unintended harm resulting in urosepsis

• **Evaluation** – pre and post audit occurred and a census
Public Health England – guidance for diagnosis April 2011

**URINE CULTURE IN WOMEN AND MEN > 65 YEARS**

- Do not send urine for culture in asymptomatic elderly with positive dipsticks
- Only send urine for culture if two or more signs of infection, especially dysuria, fever > 38 ° or new incontinence. **4,5C**
- Do not treat asymptomatic bacteriuria in the elderly as it is very common. **1B+**
- Treating does not reduce mortality or prevent symptomatic episodes, but increases side effects & antibiotic resistance. **2,3,B+**

**URINE CULTURE IN WOMEN AND MEN WITH CATHETERS**

- Do not treat asymptomatic bacteriuria in those with indwelling catheters, as bacteriuria is very common and antibiotics increase side effects and antibiotic resistance. **1B+**
- Treatment does not reduce mortality or prevent symptomatic episodes, but increase side effects & antibiotic resistance. **2,3,B+**
- Only send urine for culture in catheterised if features of systemic infection. **1,5,6C**
- However, always:
  - Exclude other sources of infection. **1C**
  - Check that the catheter drains correctly and is not blocked.
  - Consider need for continued catheterisation.
  - If the catheter has been in place for more than 7 days, consider changing it before/when starting antibiotic treatment. **1,6C,8B+**
- Do not give antibiotic prophylaxis for catheter changes unless history of symptomatic UTIs due to catheter change. **9,10B+**


http://www.sign.ac.uk/guidelines/fulltext/88/index.html

References:
TARGET toolkit for training on UTI’s from RCGP January 2017 http://www.rcgp.org.uk/~/link.aspx?id=2FC34B3CA5B446F19CB795B37AFF5083&z=z

Jan 2017 Mandy Slatter/Elizabeth Beech, BANES CCG. Contact Elizabeth.beech@nhs.net
**ToDipOrNotToDip**

Reduction in inappropriate antibiotic prescribing for UTI in Bath and North East Somerset CCG Nursing Homes has been sustained over 18 months

<table>
<thead>
<tr>
<th>N of residents prescribed one or more acute course antibiotics / all residents</th>
<th>Pre intervention 8 nursing homes (May-Oct 2013)</th>
<th>Post intervention 8 nursing homes (Jul-Dec 2015)</th>
<th>Difference pre and post intervention 8 nursing homes</th>
<th>All 22 nursing homes (Jul-Dec 2015)</th>
<th>All 20 nursing homes (Jan-Jun 2016)</th>
</tr>
</thead>
<tbody>
<tr>
<td>101/234</td>
<td>50/265</td>
<td>24% absolute reduction in the proportion of residents prescribed an antibiotic (95% CI 16% - 32%)</td>
<td>143/690</td>
<td>141/700</td>
<td></td>
</tr>
<tr>
<td>43% (95% CI 37% - 50%)</td>
<td>19% (95% CI 14% - 23%)</td>
<td>p&lt;0.0001</td>
<td>21% (95% CI 18% - 23%)</td>
<td>21%</td>
<td></td>
</tr>
</tbody>
</table>

| N of acute course antibiotic prescriptions for UTI / all residents prescribed an acute course antibiotic for UTI | 223/101 | 70/50 | 153 fewer antibiotic prescriptions (67% relative reduction) | 204/143 | 244/141 |

| N of residents prescribed antibiotic prophylaxis for UTI / all residents | 28/234 | 5/265 | 10% absolute reduction in the proportion of residents prescribed prophylaxis (23 fewer residents) (95% CI 6% - 14%) | 13/690 | 19/700 |
| 12% (95% CI 8% - 16%) | 2% (95% CI 0.3% - 3.5%) | p<0.0001 | 1.9% (95% CI 0.8% - 2.9%) | 2.7% |
#ToDipOrNotToDip  Bath and North East Somerset CCG Nursing Homes

Use of urinary catheters and associated UTI (CAUTI)

<table>
<thead>
<tr>
<th>Use of catheters in 700 residents in 20 Nursing Homes</th>
<th>60/700 residents had a urinary catheter at some point in time during this period</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 month period</td>
<td>28 residents had 45 CAUTI</td>
</tr>
<tr>
<td>Jan-Jun 2016</td>
<td>26 residents with indwelling catheters had 1 or more acute courses of antibiotics for UTI (N=41 courses)</td>
</tr>
<tr>
<td></td>
<td>2 residents using ISC had 1 or more acute courses of antibiotics for UTI (N=4 courses)</td>
</tr>
<tr>
<td></td>
<td>3 residents prescribed antibiotic prophylaxis for UTI due to indwelling catheter also had CAUTI</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Use of catheters in 742 residents in 20 Nursing Homes</th>
<th>71/742 residents had a urinary catheter at some point in time during this period</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 month period</td>
<td>32 residents had 58 CAUTI</td>
</tr>
<tr>
<td>Jul-Sep 2016</td>
<td>32 residents with indwelling catheters had 1 or more acute courses of antibiotics for UTI</td>
</tr>
<tr>
<td></td>
<td>5 residents prescribed antibiotic prophylaxis for UTI due to indwelling catheter also had CAUTI</td>
</tr>
</tbody>
</table>
Next steps

- **Commissioning** – the CCG will fund continuation of the model, and will adopt a similar approach for the AKI programme.

- **The care home pharmacist team** – has extended to cover residential homes so we will now audit UTI management in this population.

- **Documentation and education** – need to review and improve use of the documentation and include AKI in rolling education bundle.

- **Communicated** with everybody – but could have done this better and now need to share the results locally and nationally and share data.

- **Monitoring** – retrospective data capture in all nursing homes every 3 months to produce a run chart for CCG care home quality dashboard.

- **Continual Improvement** – need to continue to improve antimicrobial stewardship and documentation lots still to do using PDSA cycle.
#ToDipOrNotToDip  Key messages from Bath and North East Somerset CCG

• Use of an evidence based algorithm to diagnosis UTI in nursing home residents, delivered within an educational bundle by care home pharmacists does improve care and improvement is sustained

• Include hydration messages within the educational content

• 56% reduction in the number of residents prescribed antibiotics

• 82% reduction in the number of residents prescribed antibiotics prophylactically

• 67% reduction in the number of antibiotic prescriptions

• Improved appropriate management of UTI, and reduced inappropriate use of antibiotics

• Reduction in unplanned admissions for UTI, urosepsis and AKI

• Reduced calls to GP practices for inappropriately diagnosed UTI saves GP time

• Shared widely – Look what Nottingham did next……
To Dip or Not to Dip Project In Nottinghamshire

Our Shared Purpose
“To improve quality in UTI diagnosis and management in Nottinghamshire Care Homes”

To Dip Or Not To Dip Project Team
Dr Annie Joseph - Microbiology Lead
Olu Ogunbuyide - Project Manager
Dr Vivienne Weston - Microbiology Project Supervisor
Sally Bird - Infection Prevention and Control Lead
Dr Adrian Blundell – Consultant Geriatrician

Nottingham West CCG
Clinical Pharmacists, Community Geriatricians, Community Matrons, Data Analyst, GPs and Care Homes

Pilot – started Jan 2017
2 GP Practices and 6 Care Homes

Wider Roll-Out to other care homes and practices in Nottingham West CCG
End of March 2017

Mansfield & Ashfield CCG
Clinical Pharmacists, Care Homes Nurses Team, GPs, Care Homes and Data

Pilot – started March 2017
2 GP Practices and 3 Care Homes

Wider Roll-Out to other care homes and practices in Mansfield & Ashfield CCG

Nottingham North & East CCG
Clinical Pharmacists, Care Homes Professional Team, GPs, Care Homes and Data Analyst

Pilot – started June 2017
Locality 3
7 GP Practices and 9 Care Homes

Wider Roll-Out to Locality 1 and 2
Aim: Q2 2017

Newark and Sherwood CCG
Discussions with Head of Prescribing about capacity of Clinical Pharmacists

Rushcliffe CCG
Project to commence September 2017

Care Homes Quality Managers for South and Mid Notts
Matthew Adlem
PEACH collaborative
Dr Adam Gordon
To Dip Or Not To Dip?

Aim of the project

• Improve awareness on preventing and diagnosing UTIs in care home staff
• Reduce unnecessary dipstick testing of urine samples
• Reduce unnecessary antibiotic use in residents
• Improve communication between care homes and GPs about residents with suspected UTI
• Appropriate sending of urine samples for culture and sensitivity test

How to achieve?

Education sessions and resources for care home staff

Recommend not using urine dipsticks for investigating UTI

GPs following local guidelines for treating UTIs

Using an assessment and communication tool with local GPs

Use of red top bottles which contains boric acid for preserving the urine
**Assessment Tool**

**Older People >65 years with Suspected Urinary Tract Infection (UTI) - Guidance for Care Home Staff**

Complete resident’s details, flow chart and actions (file in resident’s notes after). **DO NOT PERFORM URINE DIPSTICK** – No longer recommended in >65yrs.

<table>
<thead>
<tr>
<th>Any symptoms suggesting alternative diagnosis?</th>
<th>Tick if present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased breathlessness or new cough</td>
<td></td>
</tr>
<tr>
<td>Diarrhoea and vomiting</td>
<td></td>
</tr>
<tr>
<td>A new red warm area of skin</td>
<td></td>
</tr>
</tbody>
</table>

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**Does the person have a catheter?**

- **YES**
  - 1 or more ticks
    - **UTI Possible - Actions needed**
      - **Tick when done**
        - For nursing residents
          - Phone, fax or securely email form to GP Practice
        - For residential residents
          - Phone Care Home Hub on 0300 083 0100 or phone, fax or securely email form to GP Practice
        - Obtain urine sample and arrange catheter change if catheterised: see reverse of form
        - Outside Mon - Fri normal working hours, phone 111 as normal
    - **Tick if present**
      - Pain on passing urine
      - Need to pass urine urgently or new or worse incontinence
      - Need to pass urine much more often than usual
      - Pain between belly button and pubic hair
      - Blood in urine
      - Inappropriate shivering/chills or High or low temperature >38°C or <36°C if measured document ..........°C
      - New lower back pain
      - New or worsening confusion or agitation

- **NO**
  - **UTI unlikely**
    - If concerned about resident, please seek guidance from GP or Care Homes Team
    - Less than 2 ticks

---

**Residents**

- ____________________________
  - DOB: ______________________

**Carer**

- ____________________________
  - Date: ______________________

**Care Home**

- ____________________________
Residents with Urinary Catheters: Sampling & Changing

For Nursing Residents:
• Registered Nurse only to take catheter urine sample using aseptic non-touch technique.
• If antibiotics are commenced for UTI, catheter change should be performed by Registered Nurse as soon as possible.

For Residential Residents:
• Contact Care Home Team or District Nursing Team to arrange for a sample to be taken.
• If antibiotics are commenced for UTI, catheter change should be arranged with Care Home Team or District Nurses as soon as possible.

Residents without Urinary Catheter: Obtaining a Urine Sample

Urine cultures are very important in the elderly to guide antibiotic choice.
• Try to obtain a urine sample when the resident is in the middle of passing urine (rather than at the start).
• Put the urine in a Red Top urine bottle, filling to the 20ml line.
• Fill in the resident’s details and type of sample carefully to help the lab to process the sample.
• Samples should be taken to the GP practice as soon as possible. If there is a delay, they can be refrigerated until taken to the GP practice at the next possible opportunity.
• Ensure the GP practice know what to write on the request card (the information from the assessment tool).

*If there is not enough urine to fill to 20ml line, then use a white top specimen bottle instead.
#ToDipOrNotToDip

Resources
NHS & free to use

Preventing Urinary Tract Infections

Recognise Dehydration

Urine Colour Chart
- Good
- Good
- Fair
- Dehydrated
- Dehydrated
- Very Dehydrated
- Severely Dehydrated

Signs of dehydration
- Top to toe
- Headache
- Sunken eyes
- Dry mouth or lips

To Dip or Not to Dip?

"To Dip or Not to Dip" is an evidence-based pathway which aims to improve the diagnosis and management of Urinary Tract Infections (UTI) in older people living in care homes. This pathway has been shown to reduce antibiotic use and hospital admissions for UTI. This leaflet explains more about UTIs and the "To Dip or Not to Dip" care pathway.

Bacteria in the Urine in Older People

The presence of bacteria in the urine in older people does not necessarily mean there is an infection that requires antibiotics. Bacteria can live harmlessly in the urine of older people. In fact, around 50% of older people have bacteria in the urine without causing any symptoms. In those with a long-term urinary catheter, this rises to 100%.

What's the Problem with Urine Dipsticks?

Urine dipsticks are often used in the diagnosis of UTI in older people living in care homes. A positive result for "nitrates" (bacterial marker) or "leucocytes" (white blood cell marker) may be a normal finding because of the high proportion of older people that have bacteria in the urine. Often, if a resident has a positive dipstick result and has no specific symptoms, such as a fall or is drowsy, they are inappropriately diagnosed with a UTI. The real diagnosis may be missed and the resident may receive antibiotics unnecessarily.
# Summary of Pilot Baseline data

## Nottingham West CCG
- January – December 2016
- 6 Care Homes, 2 GP practices
- 243 antibiotic prescriptions analysed
- 100 residents included
- 58.8% of residents received at least one course of antibiotics for UTI in 12 months
- Average number of treatment courses per resident: 2.4
- Percentage of residents on UTI prophylaxis: <1%

## Mansfield and Ashfield CCG
- January – December 2016
- 3 Care Homes, 2 GP practices
- 87 antibiotic prescriptions
- 37 residents included
- 74% of residents received at least one course of antibiotics for UTI in 12 months
- Average number of treatment courses per resident: 2.4
- Percentage of residents on UTI prophylaxis: 8%
<table>
<thead>
<tr>
<th>Nottingham West CCG Pilot January – August (8 months)</th>
<th>Mansfield and Ashfield CCG Pilot March – August (6 months)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre intervention</strong> 6 Care homes (Jan - Aug 2016)</td>
<td><strong>Pre intervention</strong> 3 Care homes (Mar- Aug 2016)</td>
</tr>
<tr>
<td><strong>Post intervention</strong> 6 Care homes (Jan- Aug 2017)</td>
<td><strong>Post intervention</strong> 3 Care homes (Mar- Aug 2017)</td>
</tr>
<tr>
<td><strong>Difference pre and post intervention</strong> 6 care homes</td>
<td><strong>Difference pre and post intervention</strong> 3 care homes</td>
</tr>
</tbody>
</table>

**N of residents prescribed one or more acute course antibiotics / all residents**

<table>
<thead>
<tr>
<th>Nottingham West CCG Pilot</th>
<th>Mansfield and Ashfield CCG Pilot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre intervention</td>
<td>70/170</td>
</tr>
<tr>
<td>Post intervention</td>
<td>75/163</td>
</tr>
<tr>
<td>Difference</td>
<td>5% increase in the number of residents prescribed an antibiotic</td>
</tr>
<tr>
<td></td>
<td>24/50</td>
</tr>
<tr>
<td></td>
<td>7/80</td>
</tr>
<tr>
<td>Difference pre and post intervention</td>
<td>40% absolute reduction in the number of residents prescribed an antibiotic</td>
</tr>
</tbody>
</table>

**N of acute course antibiotic prescriptions for UTI / all residents prescribed an acute course antibiotic for UTI**

<table>
<thead>
<tr>
<th>Nottingham West CCG Pilot</th>
<th>Mansfield and Ashfield CCG Pilot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre intervention</td>
<td>148/70</td>
</tr>
<tr>
<td>Post intervention</td>
<td>88/75</td>
</tr>
<tr>
<td>Difference</td>
<td>60 fewer antibiotic prescriptions (41% relative reduction)</td>
</tr>
<tr>
<td></td>
<td>41/24</td>
</tr>
<tr>
<td></td>
<td>7/7</td>
</tr>
<tr>
<td>Difference pre and post intervention</td>
<td>34 fewer antibiotic prescriptions (83% relative reduction)</td>
</tr>
</tbody>
</table>

**N of residents prescribed antibiotic prophylaxis for UTI / all residents**

<table>
<thead>
<tr>
<th>Nottingham West CCG Pilot</th>
<th>Mansfield and Ashfield CCG Pilot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre intervention</td>
<td>0/170</td>
</tr>
<tr>
<td>Post intervention</td>
<td>1/163</td>
</tr>
<tr>
<td>Difference</td>
<td>New resident (out of area) and prophylactic antibiotics stopped within a week.</td>
</tr>
<tr>
<td></td>
<td>1/50</td>
</tr>
<tr>
<td></td>
<td>1/80</td>
</tr>
<tr>
<td>Difference pre and post intervention</td>
<td>Two different care home residents admitted</td>
</tr>
</tbody>
</table>
Nottingham West CCG Antibiotics Prescribed

Antibiotics Prescribed Jan 16 - Aug 17

Mean Jan-Dec ‘16

Pilot started Jan-17

+2 SD

+1 SD

-1 SD

-2 SD

0 5 10 15 20 25 30 35 40

Jan-16 Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec-16 Jan-17 Feb Mar Apr May Jun Jul Aug-17
NHS BANES CCG E.coli bacteraemia rates started to decline in FY 2015/16, bucking the national trend. This aligned with the Nursing Home quality improvement programme To Dip Or Not To Dip - improving the management of UTI in care home residents. This continues to deliver a sustained reduction in inappropriate use of antibiotics, reducing the risk of AMR in this vulnerable patient group. In addition an Acute Kidney Injury educational bundle is being delivered by the CCG care home pharmacy service, as part of a CCG led primary care AKI programme.
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Improving the management of UTI in Bath and North East Somerset Nursing Homes

Summer peak in the number of residents treated for UTI

Number of residents prescribed one or more acute antibiotic treatments for UTI as a proportion of all Nursing Home residents (742; 743; 729)

Number of residents prescribed one or more acute antibiotic treatments for UTI Number of acute antibiotic treatments prescribed
#ToDipOrNotToDip
Improving the management of UTI in Bath and North East Somerset Nursing Homes

How many **acute** antibiotic treatments were prescribed for UTI in individual residents?

<table>
<thead>
<tr>
<th>Period</th>
<th>Residents</th>
<th>Acute Antibiotics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jul-Sep 2016</td>
<td>742</td>
<td>16% 189</td>
</tr>
<tr>
<td>Oct-Dec 2016</td>
<td>743</td>
<td>13% 129</td>
</tr>
<tr>
<td>Jan-Mar 2017</td>
<td>729</td>
<td>13% 141</td>
</tr>
</tbody>
</table>

- **ONE**: 76 residents
- **TWO**: 72 residents
- **THREE**: 58 residents
- **FOUR**: 189 residents
- **FIVE**: 129 residents
- **Total**: 58 residents

The chart shows the number of residents prescribed acute antibiotic treatments for UTI in different periods, with the percentage and number of residents affected.
#ToDipOrNotToDip
Improving the management of UTI in Bath and North East Somerset Nursing Homes

Use of trimethoprim is starting to reduce as replaced by nitrofurantoin which is guideline empirical first choice antibiotic for LUTI.
ToDipOrNotToDip
Improving the management of UTI in Bath and North East Somerset Nursing Homes

Nitrofurantoin is replacing trimethoprim as empirical first choice antibiotic for LUTI in line with local guidelines.

However, 1 in every 5 prescriptions for nitrofurantoin are in residents without an eGFR documented in the GP record in past 12 months.

No residents were prescribed nitrofurantoin with a known eGFR <30ml/min.

Use of nitrofurantoin to treat **acute** UTI in individual residents (45/95/743; 52/94/729)

- **Oct-Dec 2016:**
  - No eGFR within last 12 months: 7
  - eGFR >45ml/min: 48
  - eGFR <30-45ml/min: 10

- **Jan-Mar 2017:**
  - No eGFR within last 12 months: 10
  - eGFR >45ml/min: 42
  - eGFR <30-45ml/min: 12
  - eGFR <30ml/min: 10
#ToDipOrNotToDip Improving the management of UTI in Care Home residents

What does Good look like?

**88 antibiotics prescriptions for 75 residents in 6 care homes Jan-Aug17 Nottingham West CCG**

- Nitrofurantoin, 50
- Pivmecillinam, 11
- Trimethoprim, 11
- Cefalexin, 5
- Ciprofloxacin, 7
- Co - moxiclav, 4

**Antibiotic choice as a proportion of 141 antibiotic prescriptions for UTI in 94/729 residents in 20 nursing homes Bath and North East Somerset CCG 3 months Jan-Mar 2017**

- Nitrofurantoin, 52
- Cefalexin, 10
- Co-amoxiclav, 12
- Ciprofloxacin, 6
- Amoxicillin, 2
- Trimethoprim, 50
#ToDipOrNotToDip

Improving the management of UTI in Bath and North East Somerset Nursing Homes

Urinary catheter use remains stable but summer peak in residents with CAUTI

Number of residents using any urinary catheter at any point as a proportion of all Nursing Home residents (71/742; 66/743; 72/729)

Number of acute antibiotic treatments for UTI in residents with possible Catheter Associated UTI (58/32/71 45%; 30/21/66 32%; 34/22/72 31%)
Join the #ToDipOrNotToDip community of interest Implementation workshop at Knowlex #IPC2018
Join the #ToDipOrNotToDip community of interest Slack via elizabeth.beech@nhs.net